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The Macintosh™ Magazine

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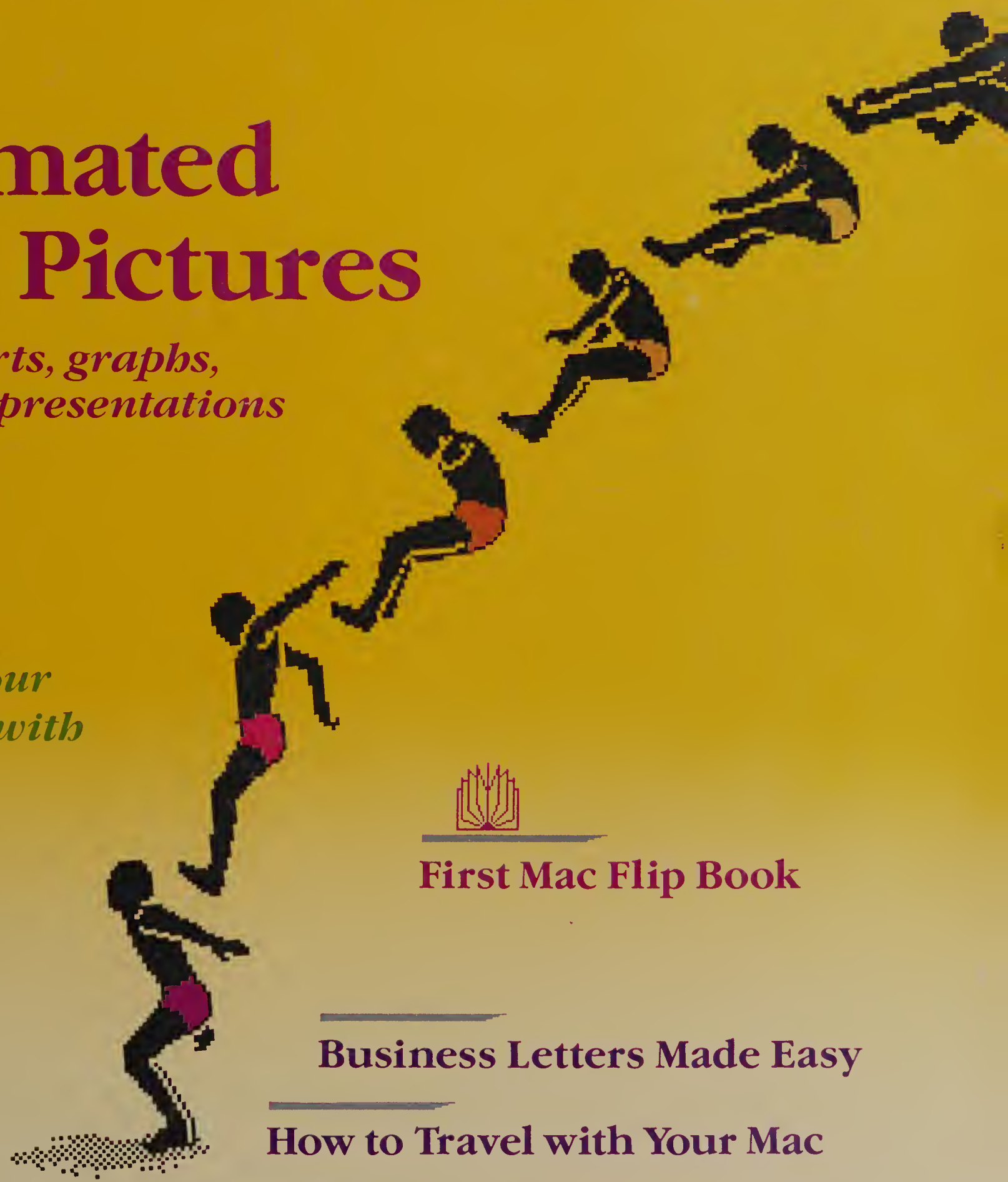


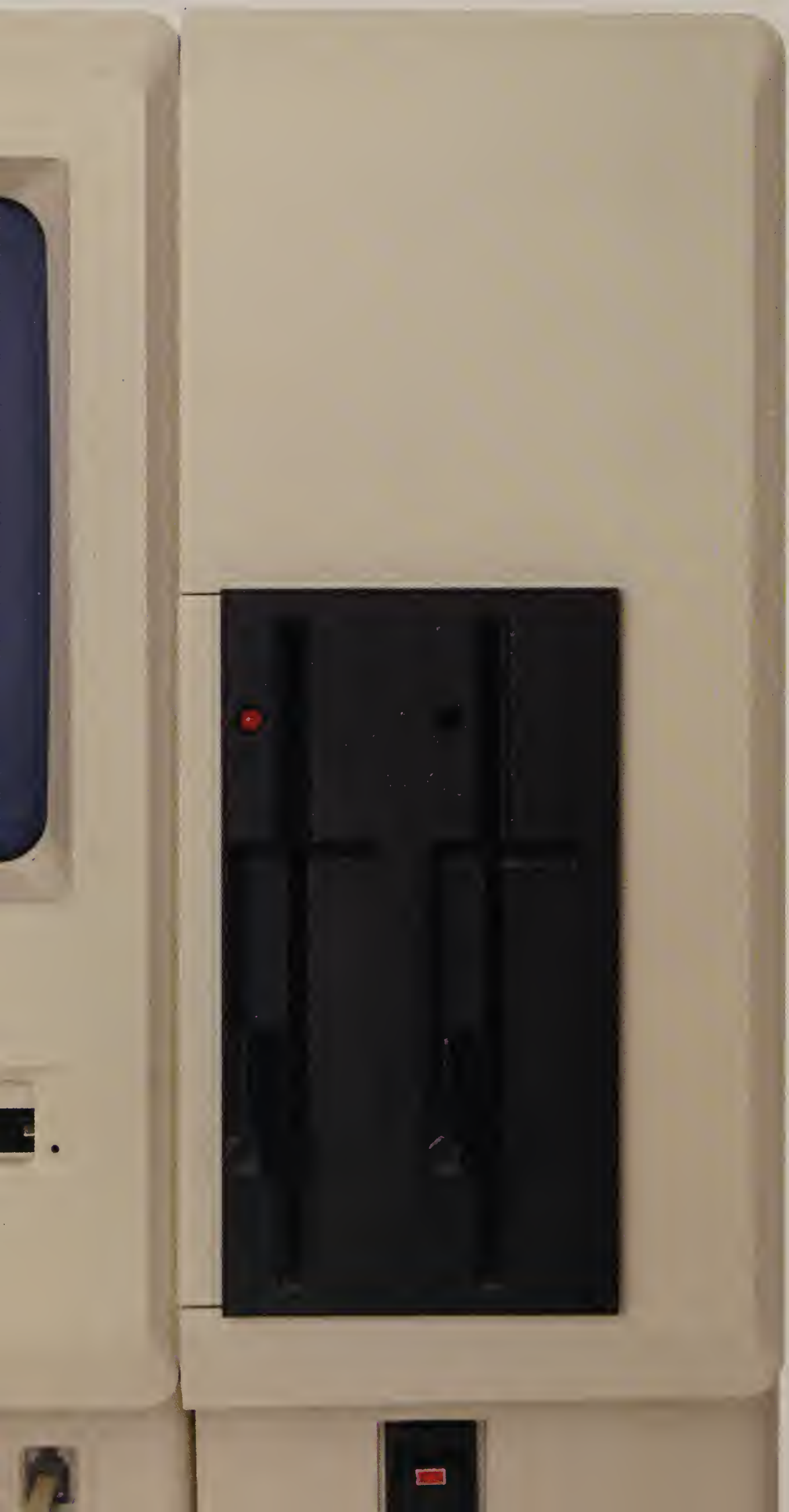
First Mac Flip Book

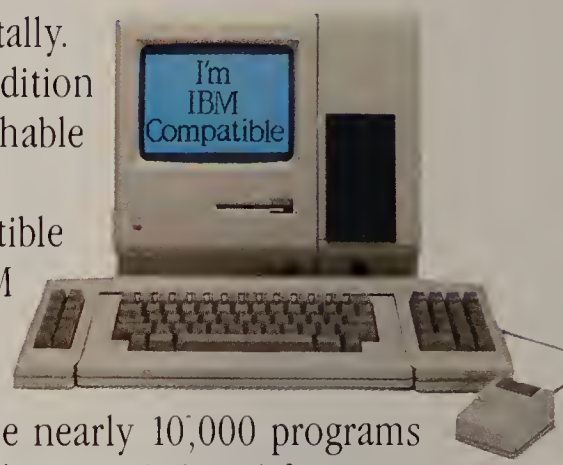
Business Letters Made Easy

How to Travel with Your Mac

Tips on Home Remodeling

MacCharlie gives Macintosh a whole new edge.





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MACWORLD

November 1985

The Macintosh™ Magazine

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Dispatch your bills, sales pitches, fund-raising appeals, and other personalized mass mailings using Business Essentials, *a practical and versatile form-letter generator. The review starts on page 94.*

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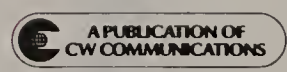

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THAT'S THE PROBLEM, ISN'T IT? YOU DON'T KNOW HOW MUCH IS SUBSTANCE AND HOW MUCH IS WISHFUL THINKING.

It surely is hard to evaluate software programs from the advertising claims. Sometimes they do exactly what you expected of them; sometimes more; other times, sadly, less.

So how can you be sure that the Document Modeler, described in detail in the last two issues of MacWorld (and summarized here), lives up to its promise?

You can't.

But you can be sure it won't cost you.

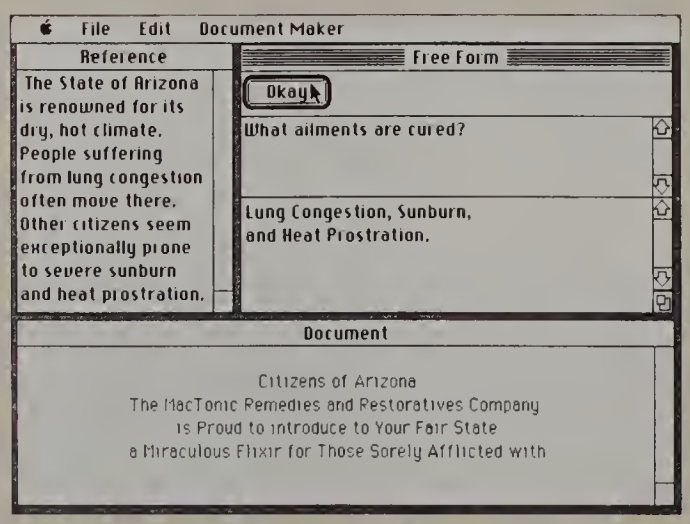
The Model Office Company guarantee is plain and simple. If the Document Modeler disappoints you in any way, return it and we'll refund your money—without carping.

We make this offer because we know that very few Document Modelers will come back to us. For one simple reason: the product is outstanding.

$1-million "topping": In recent years, universities have conducted considerable research into intelligent software. The Model Office Company has delved deeply into that research, applied it, and gone further—spending in excess of one million dollars to develop the Document Modeler.

Its price? $299. Considering the cost of its development, its quality and sophistication, and, especially, its potential for generating impressive savings, the Document Modeler constitutes remarkable value.

And if by chance it isn't exactly what you want, it won't cost you. What could be more straightforward?



With the Document Modeler you can change the specific details within a document to suit the end use — or the target market. In this spurious and shameless example, a different advertisement is to be created for each state in which the elixir is peddled. Helpful information is included with each prompt so that the specifics are appropriate and the pitch irresistible.

The remarkable Document Modeler. The Document Modeler allows you, or somebody less experienced and expensive than you, to create perfect documents time after time—in a fraction of the time it normally takes. What kind of documents? Documents that repeat themselves, yet are never so alike that you can either duplicate them or reduce them to form letter proportions.

Every business has them. Mortagage agreements, collection letters, offers to purchase, quotations, specifications, instructions to patients, classified advertisments, résumés, proposals, all manner of reports—whatever. The Document Modeler will slash the time you and your people spend creating documents that lie somewhere between boilerplate and original creation.

Here's how: First you create a document model in which you set down all the steps which must be covered to ensure that all future documents of that type cover

AS A MODELING PIONEER, YOU CAN CASH IN ON YOUR SAVVY.

all the bases. In a word, you create the wheel. Once. The model's contents then act as a memory jog, or as a teacher. As though you — plus a reference library — were at the person's elbow all the time (see example of screen prompt).

Moreover, because it's done on a Mac, not only is the content absolutely impeccable, so is the appearance.

Street-smart and flexible, the Document Modeler allows for the umpteen variables of the business world — and doesn't demand fluency in a cryptic computer language.

It's an incredible productivity tool.

What do you need to start making money? **1.** You need access to a 512k Macintosh . **2.** You need to know a lot about something that you and other people keep on doing over and over. **3.** You need the Document Modeler.

How do you make money? **1.** By utilizing a model, created by you, in your own business or practice. **2.** By submitting the model to us for evaluation and placement in our model library, from which sales will be made to other people who do the kind of things you do. If we accept your model, you get your $299 back — and thereafter earn royalties from every sale.

Risk-free: Any way you look at it, the Document Modeler is a risk-free investment.

□ Use it and the time saved will pay the cost in short order.

□ List a model in our catalogue, and get your money back.

□ If it's not what you need, return the Document Modeler to us and get your money back.

How to order: To order, or to obtain more information, phone toll-free: 1-800-268-8181. Or write the Model Office Company, The Gooderham Flatiron Building, 49 Wellington Street East, Toronto, Canada M5E 1C9.

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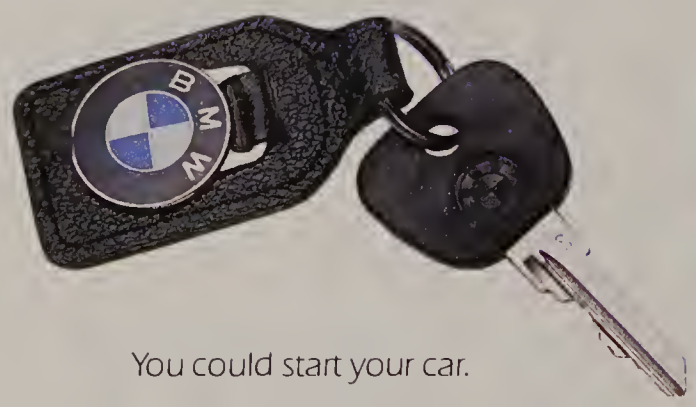
OverVUE asks: What can you do in two ticks of a clock?



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There's no question, OverVUE is one of the most powerful packages available for any microcomputer. But don't be overwhelmed, because OverVUE is also one of the easiest databases to set up, modify and use. And if you don't believe us, just ask INFOWORLD. They rated OverVUE "excellent" for ease of use (April 1, 1985).

OverVUE 2.0. It's incredibly fast. It's powerful. It's easy to use. You won't find a more complete database program anywhere!

So what are you waiting for? It will only take a few seconds to hop in your car, drive to the nearest software dealer and pick up your very own copy of OverVUE.

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David Bunnell

Is the Macintosh for the Rest of Us?

Most of us are still sitting on the fence, so it's too soon to put the Mac out to pasture

Some of my friends in the personal computer industry are beginning to speak about the Macintosh in the past tense. "It was a great idea," they say. "Too bad it wasn't an open system like the IBM PC."

During its first year, more Macintoshes were sold than during the first year of any other personal computer. To date Apple has sold over 600,000 Macs, and as any Mac follower knows, the Mac software base is huge.

So what is this past tense stuff?

Look back to the prerelease buildup for the answer: exaggerated expectations caused today's premature death watch. In his cheerleading to garner support from software developers and enthusiasm from personal computer gurus, Steve Jobs oversold the Macintosh. At one point he said that Apple would sell 600,000 Macs the first year and over a million the second.

In retrospect Steve Jobs's Mac fervor should have been taken with a grain of salt by the developers and the gurus, who should know better. However, they too were swept away by the Mac and by the prospect of stopping the IBM juggernaut.

You see, paranoia of IBM is strong among the counterculture types who created the personal computer industry. Not completely without reason, they fear that the Big Blue Elephant will someday step on them. And they fear that in an IBM-dominated world, innovation would be stifled.

The puny little Macintosh was expected to charge in and stand in the way of such a disaster.

It was a naive hope. The idea of Apple standing in IBM's path is laughable and was laughable then, too.

The success of the IBM Personal Computer is due largely to its acceptance in the vast majority of large corporations. Once those companies figured out how to increase the productivity of their executives and other employees with the IBM PC, they began ordering them thousands at a time.

But the boys and girls in Cupertino weren't totally bumbling. They realized that a new market for personal computers exists that IBM isn't yet able to capture—namely, "the rest of us."

Independent professionals, students, small-business managers, and many other non-Fortune 1000 types need personal computers, too.

So the marketing people at Apple called the Macintosh "the computer for the rest of us." And they figured that the Mac's ease of use would be just the thing to get us to buy millions of Macintoshes.

But the rest of us haven't been so fast to jump into personal computers. While sales to large corporations have slowed as that market approaches saturation, the huge new personal computer market hasn't been buying. IBM and some of the compatibles manufacturers have survived by selling more powerful PCs, including XTs and ATs, to the same big corporations, but Apple has suffered.

However, the story is hardly over. Just as many PC gurus might have been too quick to believe Steve Jobs's early Mac declarations, many are now too quick to bury both him and his machine.

(continues on page 14)

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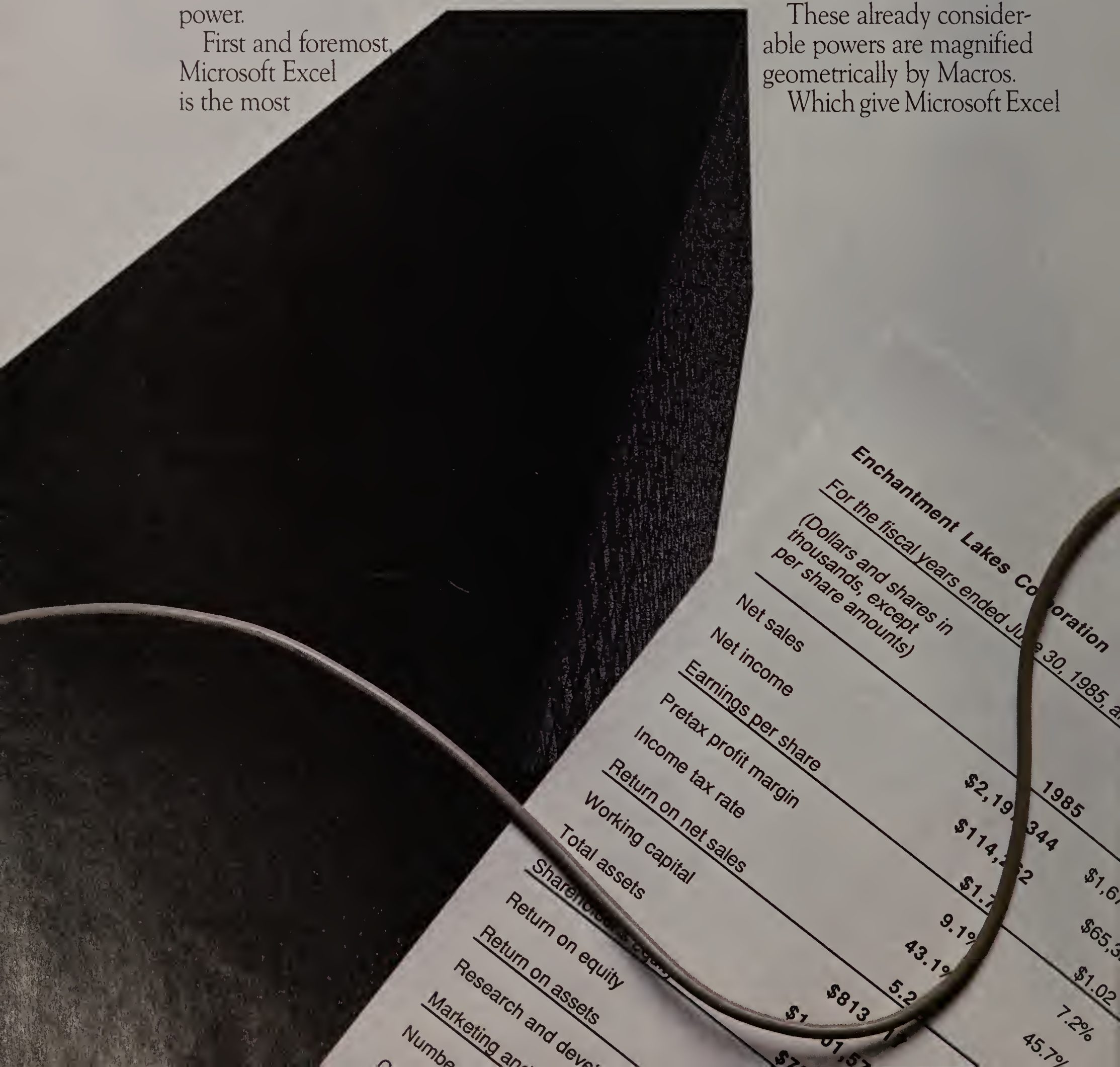

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Circle 49 on reader service card

(continued from page 11)

The truth is simply that the rest of us are waiting for a magic combination of more performance and better value to trigger us to start buying personal computers.

Apple, with its reputation in the marketplace and its head start in the technology, still has the best chance of striking the balance that makes us buy in numbers. There is nothing to stop Apple from both improving the performance of the original Macintosh and at the same time developing a whole family of Mac machines, including ones with open architecture and color graphics.

The Macintosh interface, with its advanced ease of use, has enticed thousands of people into computing, but the price is too high to create a truly mass explosion. What if you could buy a basic 512K Macintosh for under $1000? What about $500?

The Macintosh interface is so superior to the PC's MS-DOS interface that it accounts for most of the 600,000 Macintosh sales–purchases made despite the computer's lack of expandability and slow disk drives. If it weren't for the innovative interface, fewer than 100,000 Macs might have been sold.

All Apple has to do is make the Macintosh interface and software available in different packages at better prices. Rumor has it that Apple might even license the Macintosh interface, as well as Macintosh technology in general, to other computer companies. This would be great news to all Mac users because it would help ensure continued Mac software development.

The Mac is not dead; it just hasn't yet become the computer for the rest of us. □

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To order your copy of Neon, call 1-800-34KRIYA now with Visa or MasterCard, or send your check to Kriya Systems, Inc., Six Export Drive, Sterling, VA 22170. The price is $155, including shipping and handling.

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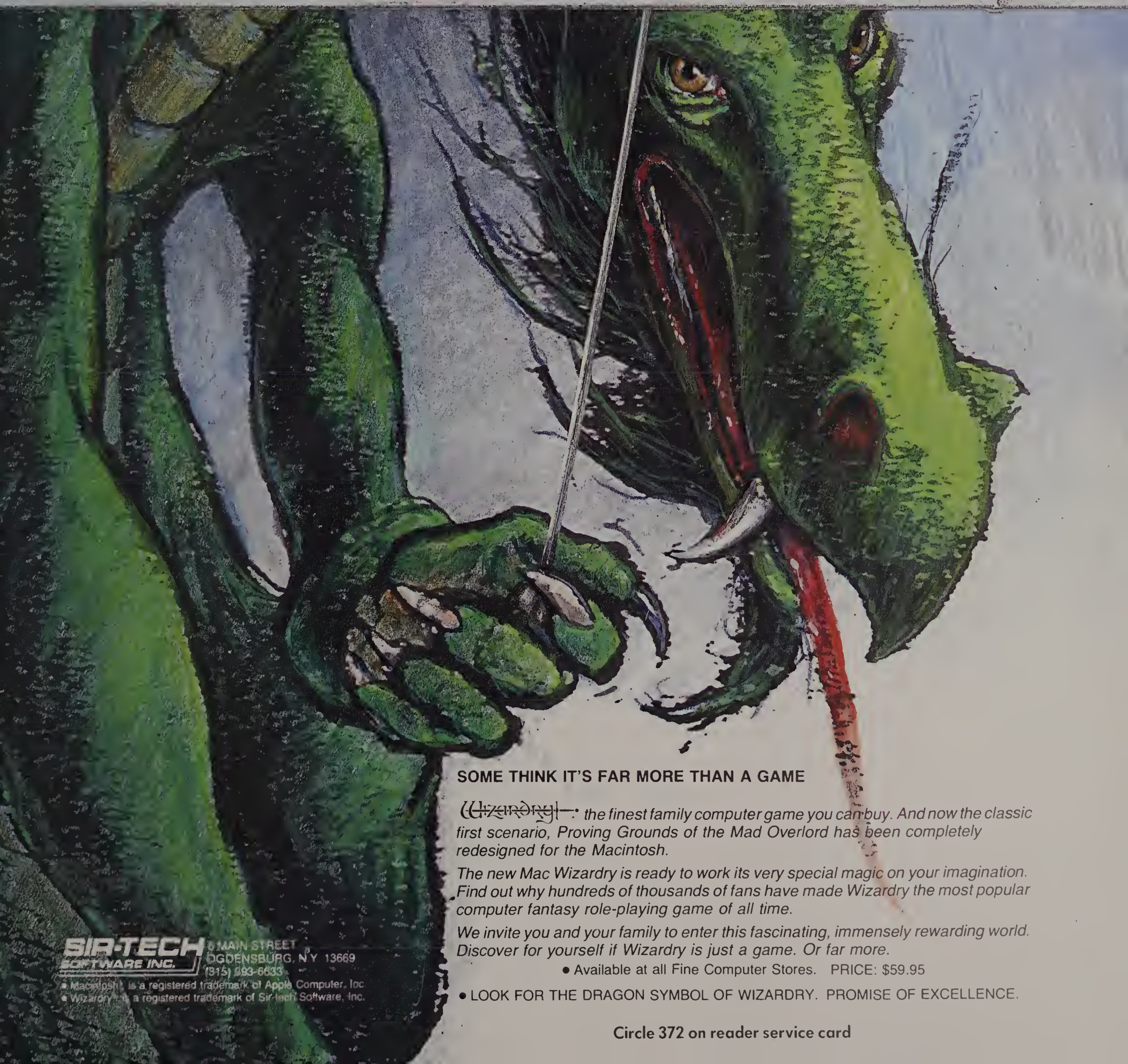
Circle 246 on reader service card

Introducing MacWizardry



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MAXIMIZE YOUR MAC

Inside every Macintosh™ beats the heart of a superb machine, and the feats it can perform when given the room to maneuver will astound you. However, the sad fact is, most Mac's will never be allowed enough RAM to run the major integrated software packages wholly from memory - at lightning speed. Nor will they know the wonder of running eight applications essentially simultaneously in Switcher. Nor will they see giant spread sheets or documents. But yours can.

512K 1 MEG 2 MEG 4 MEG

Micro Conversions, Inc. was a pioneer in 512K Upgrades (We still offer them at the best prices around.), and we were the first to break the "512K Barrier" with our 1 Meg Upgrade. Now we offer two more sizes of RAM - all recognized by the Finder - all available to software without bank switching - and all at affordable prices. So, if you want to be impressed by your Macintosh, maximize it with a Meg or more.

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Keyboard text from scratch or bring it in from other Mac programs. Either way, you get full text editing features with the ability to change font, style and size at any point. ReadySetGo supports all Mac fonts including real typefaces like Times™ and Helvetica™ and all sizes 1 thru 99. When you edit text or resize a block, the display instantly updates and text automatically refits the block.

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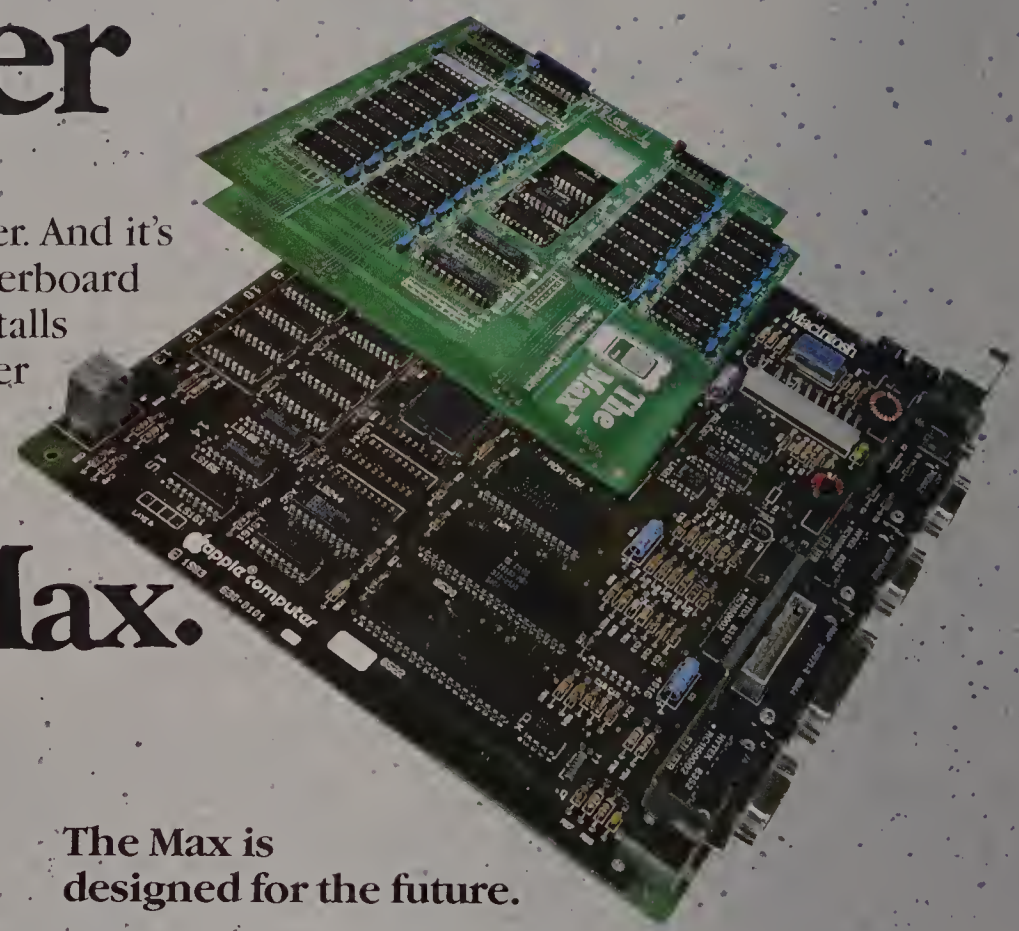
Like Mother, Like Daughter

We loved the Macintosh so much we gave it a daughter. And it's everything a daughter should be. The Max™ is a daughterboard that combines with a Macintosh motherboard and installs in minutes. The Max increases your computing power from 128K or 512K to a full 1.5 megabytes of configurable memory. Its RAM disk runs circles around even the fastest internal disk drives.



The Max.

The Max lets you do more.

You can run all your present software with The Max. Use data bases, word processors and integrated programs like Jazz to create more elaborate spreadsheets, work with larger documents, and file more data than ever before.

With The Max and Apple's Switcher, you can run up to eight applications at once – all at RAM speed!

If you crash, The Max forgives you. Unlike other RAM disks, The Max allows you to reset and recover your 1024K RAM disk intact.

The Max is fast.

The Max doesn't waste your time. Move in and out of applications almost 10 times faster than a floppy disk – and 2 to 3 times faster than an internal disk drive. Boot MacPaint in 2.6 seconds, or MacWrite in 3.4 seconds!

The Max lets you configure.

The MaxRAM™ software included with The Max allows you to configure your Mac to suit your needs. Have 1024K of usable, contiguous application space with a 400K RAM disk. Or select a 512K Macintosh with a 1024K RAM disk. And MaxRAM software makes this possible without any modifications or patches to your Apple ROMs.

The Max is cool.

Like the motherboard, the Max is cool and efficient. It adds only 1.3 watts to the power consumption, two to three times less than other memory expansions on the market.

The Max is designed for the future.

Unlike memory expansions using older technology, The Max has been designed to be fully expandable. It is pin compatible with the soon-to-be-released megabit chips† and address-decoded for 4 megabytes of memory, the maximum the Macintosh can address.

The Max is available now.

Contact your local dealer for more information about The Max. Kits are also available.

128K to The Max 1.5 MB	$795
512K to The Max 1.5 Mb	$645
128K to 512K	$249

The Max comes with a 90-day warranty against defects in parts, materials and workmanship. An extended service contract for your entire Macintosh, MaxCare,™ is available through your dealer.

See your local dealer for more information about The Max, or contact MacMemory Inc., 500 West Middlefield Road, Suite 28, Mountain View, CA 94043, (415) 964-4176.

MacMemory Inc.

†Due to the unavailability of the one megabit chip, MacMemory anticipates, but cannot warrant, expandability to four megabytes. The expected production release date is early 1986.
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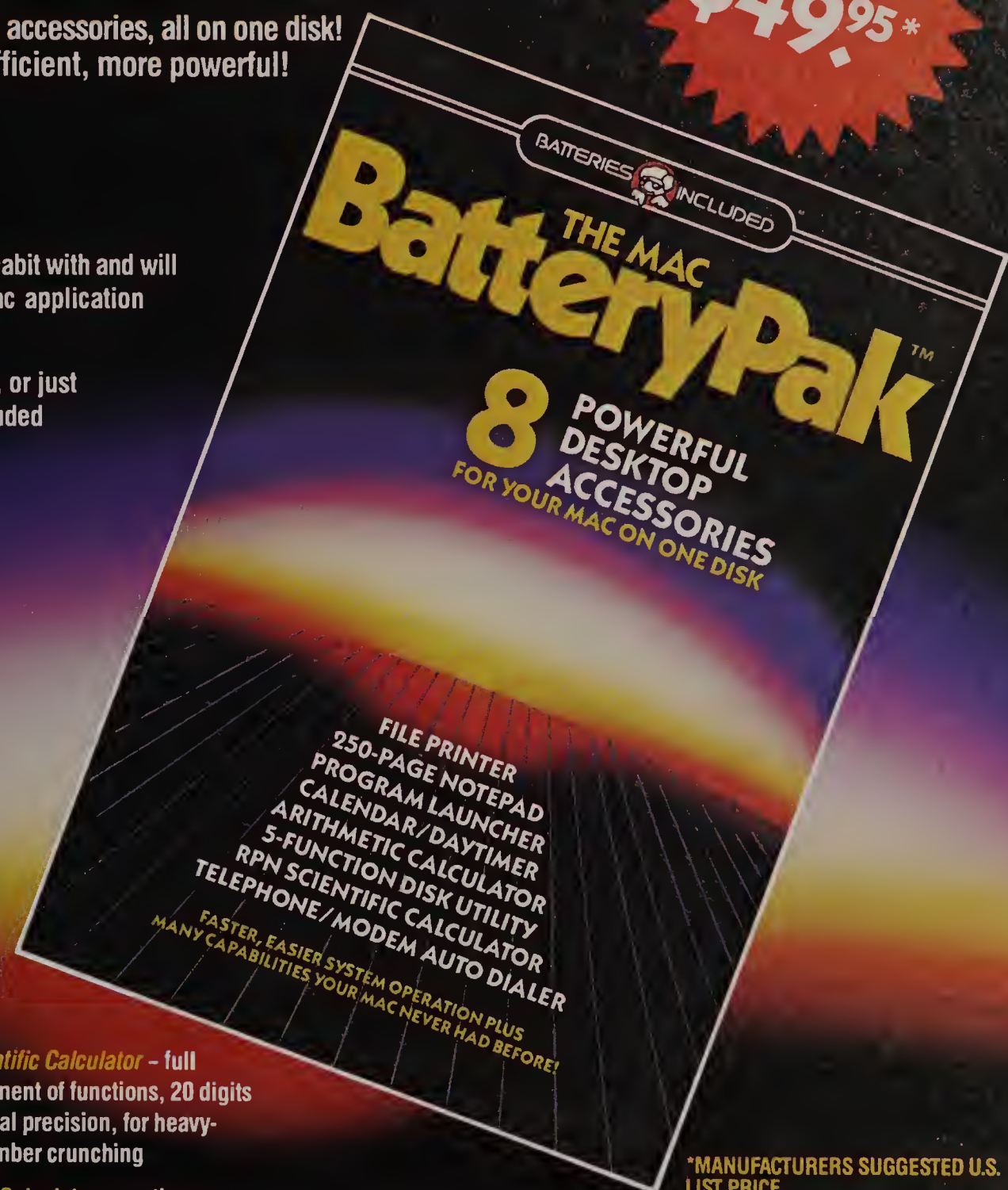

What is BatteryPak?

- 8 memory-resident accessories – they cohabit with and will function concurrently with virtually all Mac application programs
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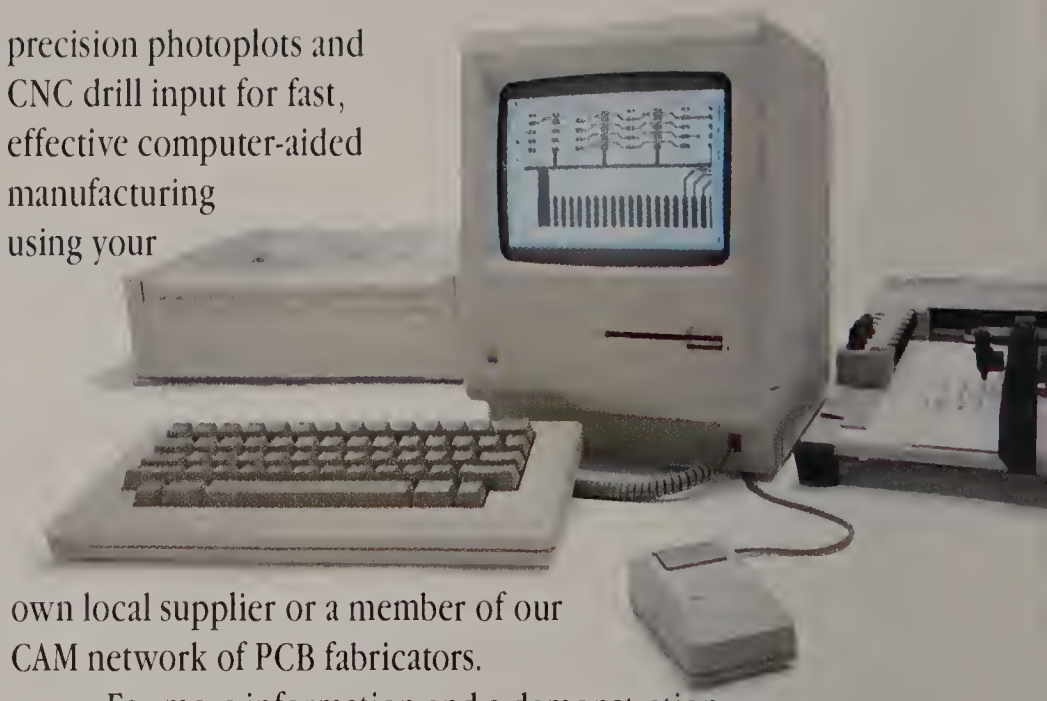

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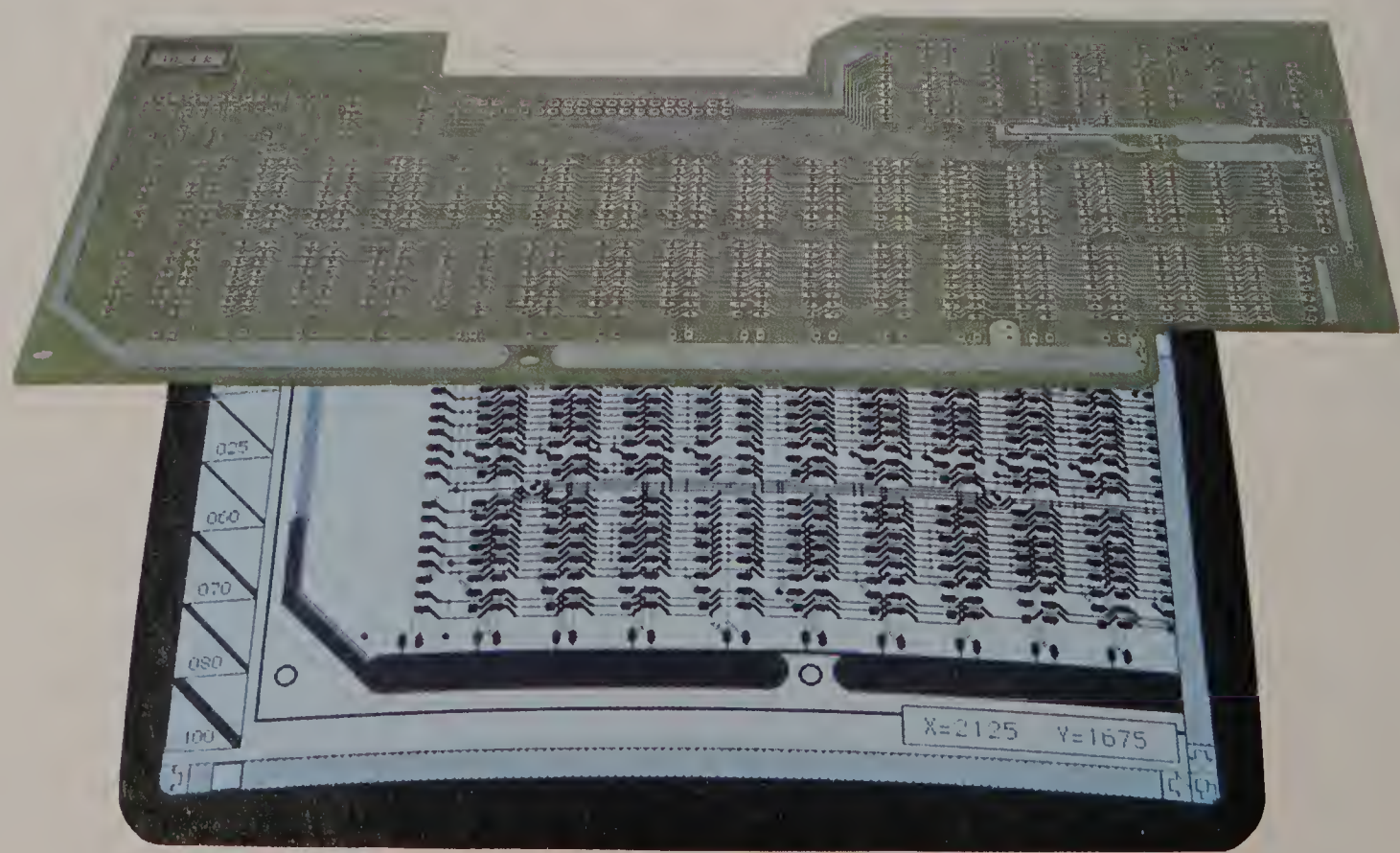

Circle 378 on reader service card

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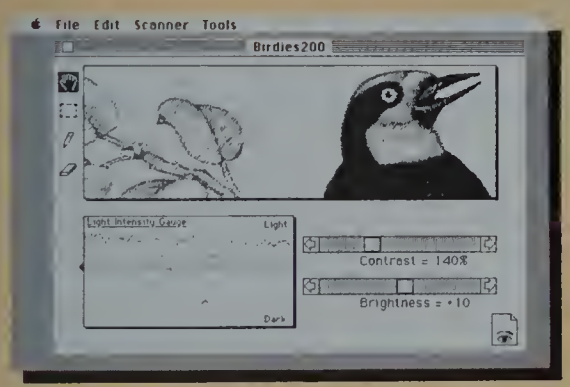
Hertzfeld on ThunderScan™

After three years on the Macintosh development team, Andy Hertzfeld began to work on the software for an easy-to-use, low-cost way to put images into Macintosh. The result: ThunderScan.™ The high-resolution optical scanning device that turns the ImageWriter printer into an image reader. Recently, Andy shared some thoughts on the product he's dubbed, "MacPaint for the rest of us."

"...I was incredibly thrilled. I knew it would blow people's minds."

"I spent over three years developing Macintosh's operating system. I care a lot about Mac and wanted people to be able to use it to its full potential. But how do you get images into the machine? Most people can't draw. That's why I got involved with ThunderScan. To give people, especially non-technical users, an easy, low-cost way to get high-resolution images into Macintosh. When I first saw how beautiful ThunderScanned images were, I was incredibly thrilled! I knew it would blow people's minds."



ThunderScan's image processing tools let you enlarge, reduce, cut, paste, select, draw, scroll and erase, as well as control contrast, brightness and half-toning.

"You get to make artistic decisions. To change and improve what you see."

"Macintosh inspires creativity. ThunderScan is a vehicle for its expression. It lets you put any printed image into Mac. But you're never stuck with the image as is. You get to make artistic decisions. To change and improve what you see. You can control the contrast, brightness and half-toning. Over all or just parts of the image. Even create reverse images and outlines. It's really fun. But the great thing is, when the novelty wears off, you have a useful tool.

"ThunderScan has a whole range of applications. Some people use it for inserting graphics into newsletters and reports. I know a fine artist at Stanford who makes collages with it. I use it a lot, too. The way I write a program is an expression of who I am, so in my new "Switcher" program, I included a ThunderScanned image of myself."

"...With LaserWriter you can create unbelievably exquisite images."

"We now have an enhanced version (available as a software upgrade for current users) that has some neat new features. It supports AppleTalk, the wide-carriage ImageWriter and LaserWriter. The output resolution of LaserWriter and ThunderScan's input resolution are a perfect match. So with LaserWriter you can create unbelievably exquisite images.

A scanned image is just the start. Now you have micro-control over 32 shades of gray to enhance all or part of the image as you please.

"ThunderScan is a complete imaging system. You don't have to buy anything else. You just snap out ImageWriter's ribbon cartridge and snap in ThunderScan. It fits in any office or home environment, takes up no space and the lighting is always perfect.

"Developing ThunderScan was a lot like developing Macintosh. We were doing something for the first time. Making an important tool. We think we did a good job."

ThunderScan requires 128K. But to take full advantage of all its features, you'll need a 512K Mac.

Available now through computer retail stores or directly from Thunderware for just $229. To order or for more information, call today (415) 254-6581. Thunderware,® Inc., 21 Orinda Way, Orinda, CA 94563.

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ThunderScan™

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Looking for the perfect gift for your husband's Macintosh™? For your Mom's? Your daughter's? Your son's? Don't forget your boss. And how about your own Mac? Doesn't it deserve a little something for the holidays?

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Letters

Down from a Horse

Horsefeathers! That is the only response I can make to David Bunnell's "Mutiny on the Bounty" [*Macworld,* August 1985]. Your comments regarding the palace coup at Apple miss the mark completely. The major problem with Apple has been the influence of Steve Jobs on the day-to-day operation of the company.

You, of all people, should realize that the real strength of Steve Jobs is in being the visionary, not in day-to-day management. After all, John Sculley was hired to fill a management gap. Jobs may have led his company to new breakthroughs in personal computing, but Sculley and the Apple II line will provide the backbone that makes it all possible.

Robert S. Morrison
Charlotte, North Carolina

All Roads Lead to Cupertino

Let's get serious. Steven Jobs is a nice guy. He was a bright kid who worked hard and got lucky. But he is not personally responsible for the advancement of Western civilization.

Rick Scherle
Cypress, California

All This and Apple II

David Bunnell laments the job done on Jobs and suggests that the Apple II division will now be wagging the Macintosh. It is too early to tell, but the major mistake made in marketing the Mac was to target two diverse groups at the same time: the computer novitiate and the IBM-based corporate world. Left out were the more than 2 million nonneophyte fans of the Apple II series. AppleTalk is advertised as becoming IBM compatible soon. There is no such push for Apple II compatibility, which could be the impetus for painless data transfer and easy upgrades to a Mac environment.

The chemistry department here at Brock University, where I am a professor, cannot throw out two dozen Apple II+'s, IIe's, and IIc's along with all the data, databases, and text files in them. We cannot afford to replace all the machines at once or to convert all the software at once. We would upgrade to Macs if Apple paid more attention to Apple IIs talking to Macs than to Macs talking to IBM PCs.

If the new regime at Apple addresses those concerns, Mac sales will expand far faster than under the old regime, which wouldn't recognize the existence of the Apple II.

Jack M. Miller
Saint Catharines, Ontario
Canada

More Jobs

Steve Jobs didn't just create Apple or even the personal computing industry. His success and daring and the glamour bestowed upon him by his erstwhile friends in the press did something insanely great for the entire country. It sparked a wave of entrepreneurship that will benefit this country enormously. America already has enough managers, even good ones like John Sculley. We already have enough boring computer companies. We're short on leaders and heroes. I hope that you're right and that we'll see a lot more of Steve Jobs.

Kerry M. Glanas
Brooklyn, New York

As the Apple Turns

David Bunnell completely misrepresents the situation at Apple. He paints a picture of a group of Robin Hoodish pirates led by a pirate king (Steve Jobs) being overthrown by a group of sulking know-nothings (the Apple II division) led by a power-crazed outsider (John Sculley), whose mind has been dulled by excessive consumption of cola products.

Let's look at the facts. The management changes at Apple Computer occurred at a board meeting, not a lynching party. At that meeting the board of directors, which Jobs chairs, approved Sculley's plan as best for the company.

Nobody should downplay the contributions that Steve Jobs, Steve Wozniak, or the Macintosh development team has made to personal computing. Innovators, however, seldom make good managers. Jobs recognized this when he brought Sculley into Apple.

Bunnell is correct on one point, though. The story is not over. It will be told by how Apple Computer performs in the market.

Don Lueder
Long Beach, California

Crazy about Hitchhiker

In "Wake Up to Adventure" [*Macworld,* May 1985], Sharon Zardetto Aker wrote very favorably of *The Hitchhiker's Guide to the Galaxy.* On the strength of her review, I bought the game and proceeded to go quietly berserk. Quite simply, no one alive can complete the game without considerable outside help. The game is contrived of a maze of blind alleys, dead ends, misleading statements, plain lies, and concealed

(continues on page 26)

Paradise's MAC 10,™ the 10mb hard disk subsystem designed for the MAC.

Your Mac's been lonely too long.

(Advertisement)

You just found the right hard-disk subsystem for your MAC... Check out the Paradise MAC 10.

Easy To Look At: Beauty isn't everything but most hard disk MAC drives will scare your computer to death in the morning! The MAC 10 is artfully engineered to complement the aesthetics of the MAC.

Nice To Have Around: Just 3.5″ wide and no deeper than the MAC, the MAC 10 has a smaller footprint than any other external MAC hard drive subsystem. Nice to carry around too... Only 5 pounds.

The Right Breeding: Paradise Systems is known for innovative engineering. The MAC 10 is the latest in a line of ground breaking micro computer peripheral products from Paradise.

Accommodating: 10 MB of formatted data storage, there when you need it. Equal to 30 MAC floppy drives! Storage you'll want for *Jazz* and other popular business applications.

Your MAC Can Relate To It: 5 times faster than the add-on MAC floppy.

So Can You: Just plug in the MAC 10 and you're ready to go ... That's it!

No Surprises: The MAC 10 won't void your *Apple* warranty, or require you to modify your system. The user interface uses pull down menus, just like the one you're used to on the MAC.

Long Term Commitment: The MAC 10 comes with a 1 year limited warranty*.

Do Your MAC A Favor: Go see your Apple dealer and look at a MAC 10 or call us toll free at (800) 822-2020 (CA.) or (800) 527-7977 (outside CA.). It will be the beginning of a wonderful relationship.

Specifications:

CAPACITY:
- 12.75 mb unformatted
- 10mb formatted

DISK DRIVE SEEK TIMES:
- Adjacent track ..... 18 ms
- Average ..... 85 ms
- Maximum ..... 180 ms

ROTATIONAL SPEED:
- 3600 RPM

POWER REQUIREMENTS:
- 110/220 Volts AC, 50/60hz, 50 watts max.

DIMENSIONS:
- Height ..... 5.5 inches
- Width ..... 3.5 inches
- Depth ..... 10.8 inches

WEIGHT:
- Approx. 5 lbs.

INTERFACE:
- Connects to your MAC via the modem or printer port. Printer connector and integral print spooler provided on MAC-10.

**See retailer for details.*

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Suggested Retail Price

$1,495—

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(continued from page 23)

objectives so bizarre that the unsuspecting player can reach no conclusion except a nervous breakdown.

Les Weissman
CompuServe

Post Forma

As Macintosh product manager at Megahaus, I am writing to update your readers about *MegaForm* and to clarify some of the problems encountered by Bill Grout in "The Mac Goes Pro Forma," *Macworld,* July 1985.

Grout found that *MegaForm* was slow in moving between cells of complex forms. The sample forms on the *MegaForm* disk, however, do not fairly demonstrate the program's speed. All the detailed forms on the samples disk are *MacPaint* pictures pasted into *MegaForm.* The samples demonstrate that forms can be drawn or digitized in *MacPaint* and used by *MegaForm.* Using *MacPaint* pictures, however, instead of forms created in *MegaForm* itself, consumes memory and slows the operation of the program. Using even complex forms drawn in *MegaForm* is quite fast.

Those same factors account for the slow printing speed as well. *MacPaint* pictures, which are bit-mapped, take much longer to print on the LaserWriter than *MegaForm*'s own forms. *MegaForm* version 2.0 has sample forms created entirely in *MegaForm,* and this speeds printing.

Christopher Van Buren
San Diego, California

Checking the Checker

I recently purchased *Hayden: Speller* based on glowing reviews and the implied endorsement by Microsoft, which packages *Word* with an ad insert and order form for the spelling checker. But it is the first Macintosh program I have purchased that has been a genuine disappointment. Regardless of Jeremy Joan Hewes's words in support of *Hayden:Speller* ["The Writer's Tool Chest," *Macworld,* July 1985], the program suffers from some grave shortcomings.

Hayden:Speller contains errors. For example, its main dictionary spells *utterly* as *uttterly.* Errors in the main dictionary cannot be corrected. And with Finder 4.1 installed, *Hayden:Speller* accesses a file but does not read it. Hayden appears to have involved the Finder in its copy-protection scheme, against Apple's recommendation, and the scheme has backfired by also protecting the program from doing any work.

Also, my *Hayden:Speller* does not read documents produced in *MacWrite* 4.5 but works with the old Finder on documents produced in *MacWrite* version 2.2 or earlier and in *Microsoft Word* 1.0.

Hayden:Speller cannot cope with the full Macintosh standard character set. Even when words containing diacritical marks are loaded in the dictionary, they are not compared properly. To make matters worse, *Hayden:Speller* takes the words apart by treating each letter with a diacritical mark as a punctuation mark, handling each part as an individual word. *Señora,* for example, is read as *Se* and *ora.* The result is confusion.

Similarly, *Hayden:Speller* treats each part of a hyphenated word as a separate word. *Hayden:Speller* is not able to catch the misspelling *back-up* as long as *back* and *up* are in the dictionary.

A spelling checker shows its real worth when you work with long documents, but *Hayden: Speller* is limited to documents

(continues on page 30)

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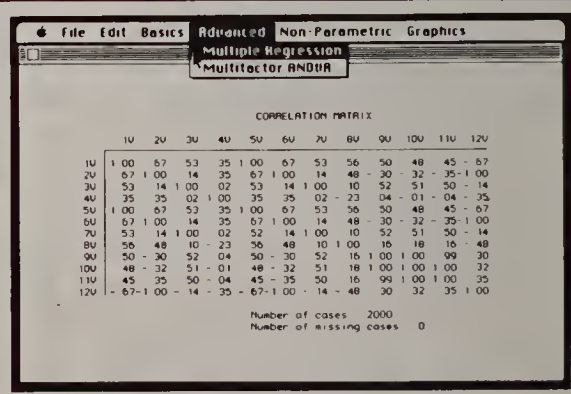

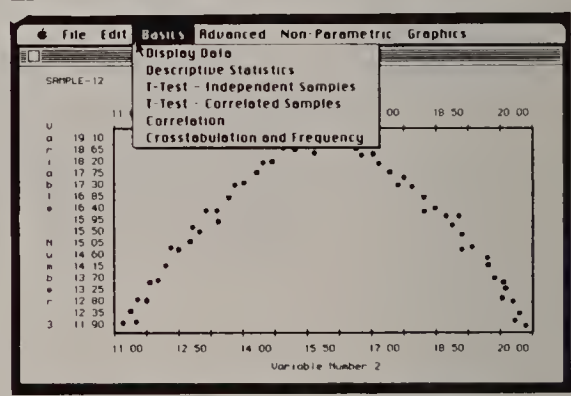

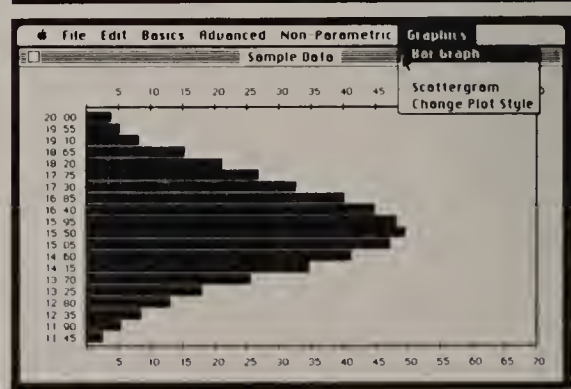

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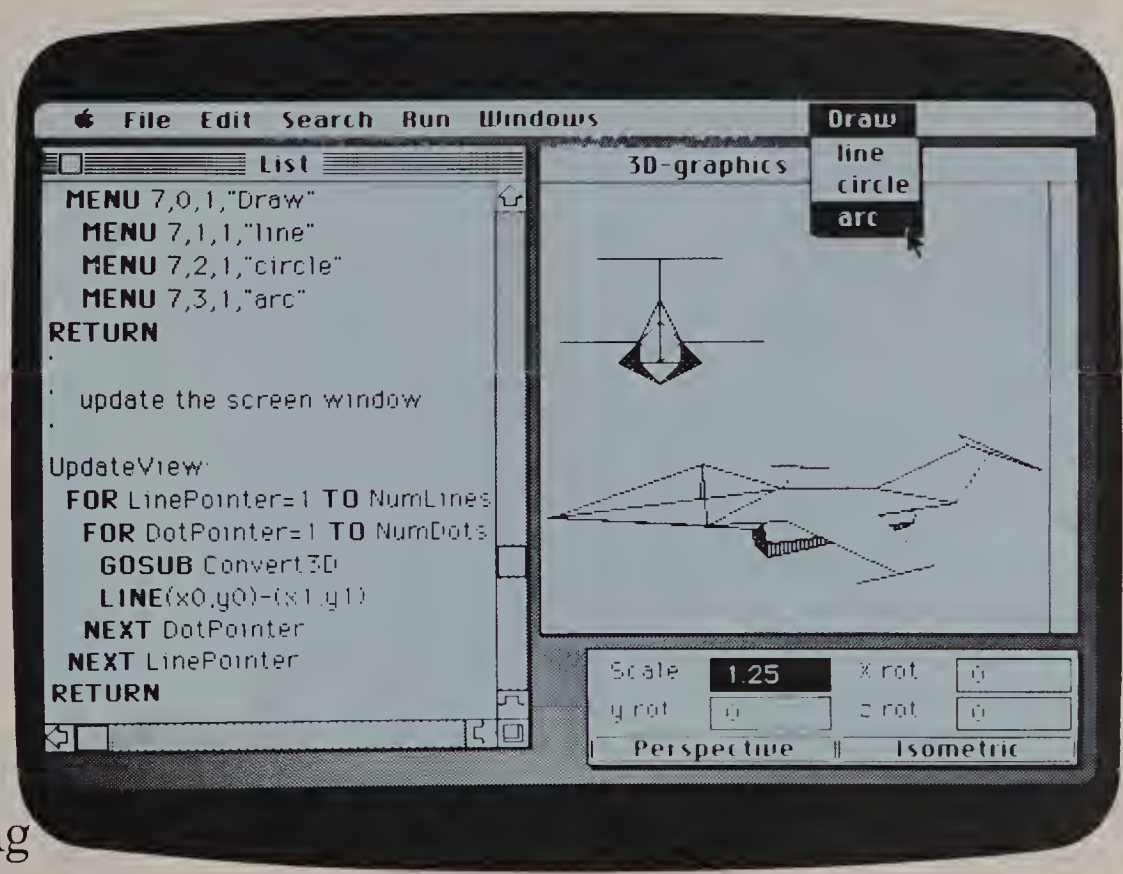

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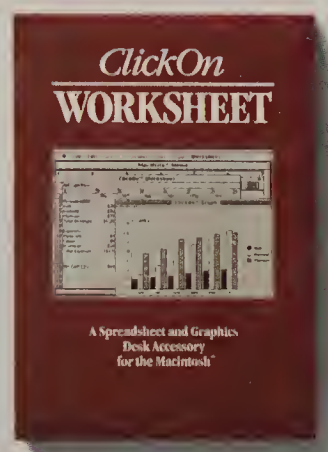

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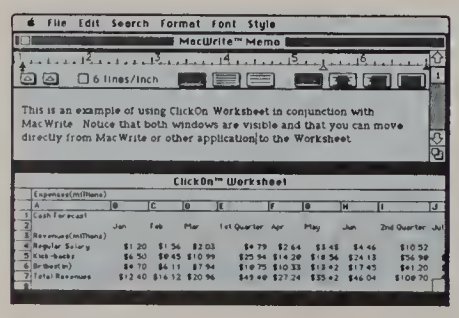

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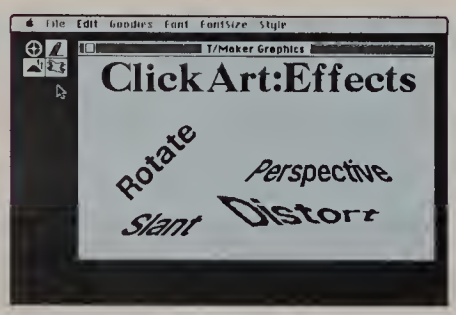

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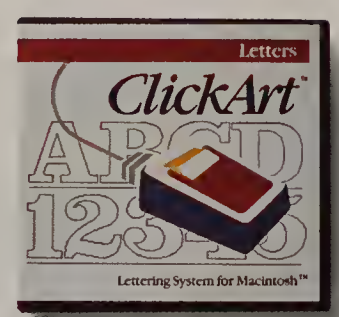

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(continued from page 26)

of less than ten pages. You can work around that serious limitation only by a lot of time-consuming work: subdividing the document into shorter spelling check files.

I have been satisfied with other Hayden software I have purchased, and I hope Hayden will soon repair *Hayden: Speller*'s flaws.

Robert J. Little
Torrance, California

It's So

Please say it isn't so. Tell us you just forgot to include *Macware News* in the July issue. That column is the first thing I turn to in each issue. We who bought the Mac when so few programs were available want to see all the new programs and products that are coming out. Please don't drop this important part of your great magazine.

John Grisham
Memphis, Tennessee

We understand your concerns and your need for product information. The decision to discontinue Macware News *was a difficult one. We feel, however, that our readers are better served by editorial material based on our own evaluation of products rather than on information compiled from manufacturers' descriptions.—Ed.*

ReadySetGone

PageMaker seems to be a fine product, but the price seems high at $495. I cannot understand, however, Danny Goodman's preference for *MacPublisher* over *ReadySetGo* ["Publishing Turns an Electronic Leaf," *Macworld,* July 1985]. The samples show *ReadySetGo* mixes type and does not cut off printed copy, whereas *MacPublisher* is limited to one type style per text block, and it clips printed copy.

I think the samples show that *PageMaker* and *ReadySetGo* have results that look almost the same. Your reviewer seems to have missed the point that only the final usable results count.

I have used both *ReadySetGo* and *MacPublisher* and find *ReadySetGo* to be my kind of print.

I. Ernest Blumel
New York, New York

There Ought to Be a Law

I have had a 512K Macintosh for about four months, and in that time it has taken over all the word processing in my law office. As we become more proficient, I trust the Mac will also take over file and case management and, ultimately, billing as well. To date, I am not aware of any Macintosh software specifically designed for law offices. However, I have found that such a package is unnecessary. We are using *Microsoft Word* to good effect and are investigating various databases.

In the year prior to purchasing the Mac, I was approached by computer salespeople and software merchandisers from every major brand of personal computer and dedicated word processor. At no time was I ever contacted by Apple Computer or anyone representing it. I had to discover for myself that the Macintosh was something that would be useful for my office. Then I had to brave the adverse opinion of my colleagues who believe that IBM or IBM compatibility is the final word in office management. When I first indicated to the Macintosh salespeople that I was an attorney and asked whether any software was available for a law office, they told me the Mac

(continues on page 34)

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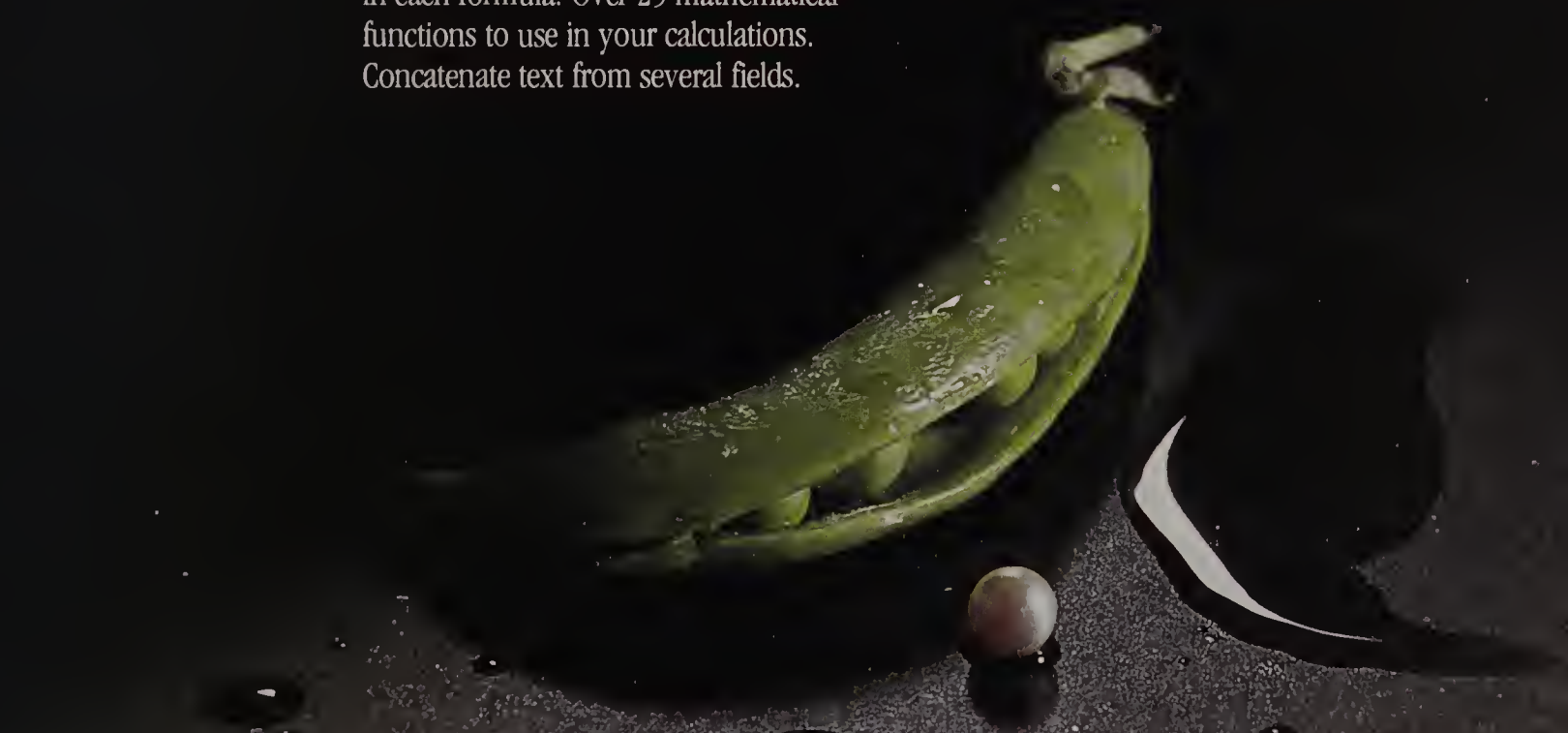

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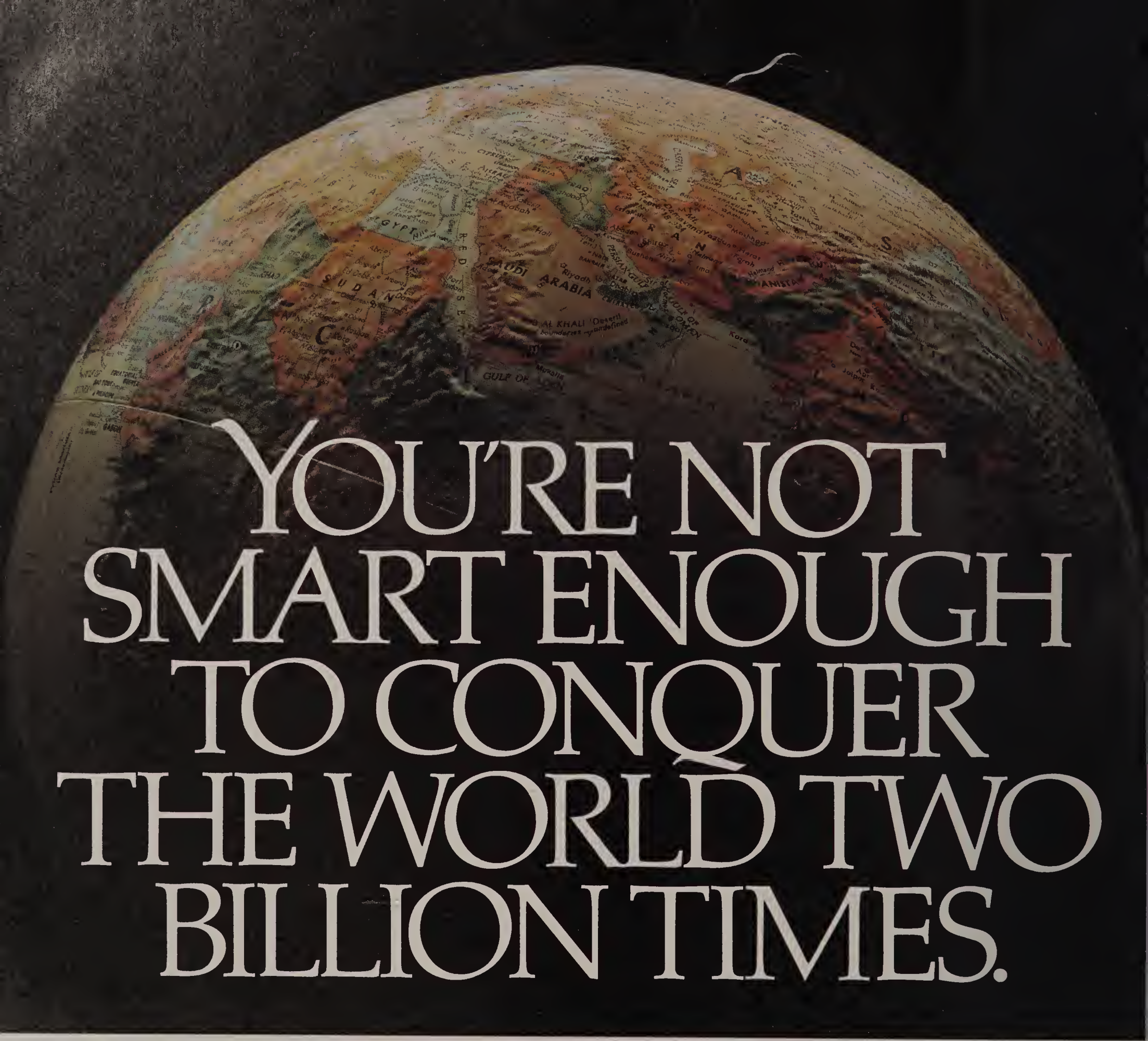

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You may be smart and imaginative and persevering enough to dominate the world once, ten times, a hundred, a thousand. But sooner or later, your intellect will crack. It happens to all of us.

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A practice mission will give you an idea of what we mean. Climb to 5000 feet. Now bring her to a heading, zero, zero, zero. Okay, ready? Enter a shallow dive. Easy, keep your wings level, pull the nose up through horizon, full throttle. Keep back pressure on the stick. Fine, you're inverted. Alright, relax pressure to round out the top of the loop.

Not bad for a beginner. Try a Snap Roll. Great! Drop altitude. See if you can fly under this bridge up ahead. Hey, you're pretty damn good. But listen, don't get cocky. One stupid, clumsy pilot error, an enemy aircraft sweeps in behind you, and boom, you're dead.

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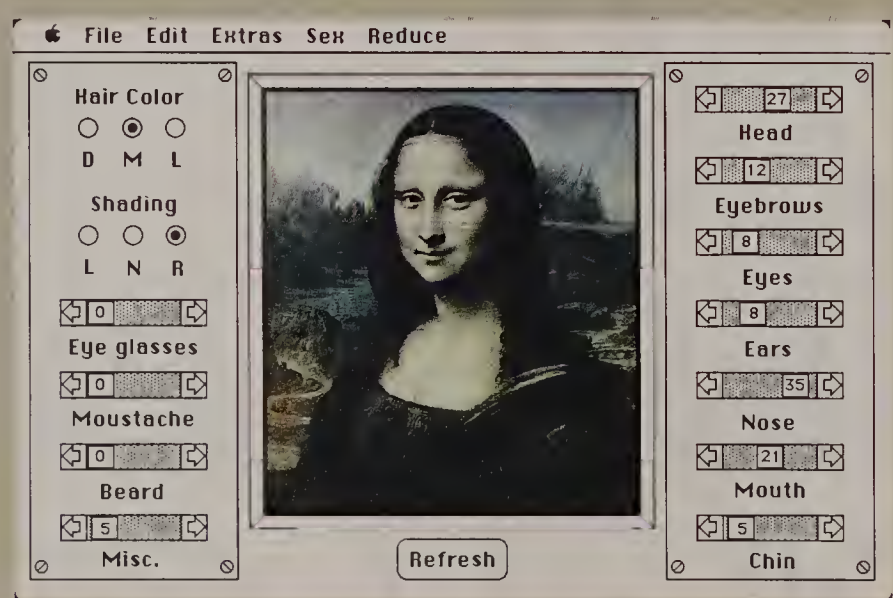

Probably not.
But you can create thousands of interesting faces with a click of a scroll bar! Its easy and anyone can do it. With hundreds of features, the possibilities are endless!

Mac-a-Mug
"the people processor"

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(continued from page 30)

was not appropriate for a law office until such software was developed. Based on my experience, however, theirs was a completely fallacious assumption.

David R. Clowers
Milwaukee, Wisconsin

Late and Unlamented

In the United Kingdom, Apple states that if its product doesn't work as specified, it will either rectify the problem or refund the purchase price. Apple U.K. did the latter in my case. We have much stricter consumer legislation here than in the United States. For example, the minimum warranty is one year, not 90 days.

Since my Lisa crashed the same day it was delivered, Apple was subjected to 11 months of earache before I realized they had no idea of how to cure the problem. At that point I went for the refund.

The day before my Lisa went back to Apple, the internal hard disk caught fire. I hadn't planned a Viking funeral for it, but the laughter was loud and long.

Stephen J. Prescott
East Hagbourne,
Oxfordshire
United Kingdom

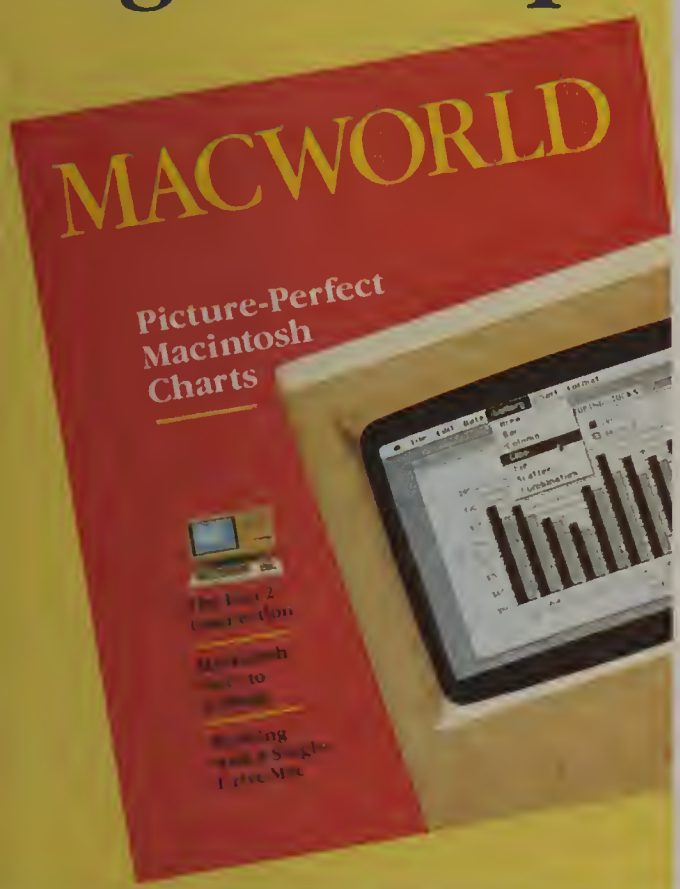
One for the Guinness

I still have the thinnest possible Mac. I am paying a price, though. I probably hold the world record for disk swaps for one operation: 59.

I wrote a two-page letter to a potential customer. I included 11 font changes on page 1 and a digitized photograph on page 2 to demonstrate the capabilities of the Mac. I saved the document on another disk and decided to make a copy using the 50 percent reduction utility to get both pages on one sheet of paper. Mistake!

(continues on page 38)

Sign me up!



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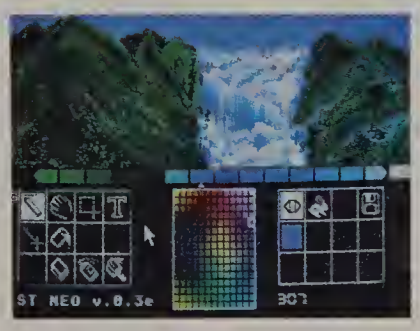

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**With optional monochrome board (non bit-mapped)
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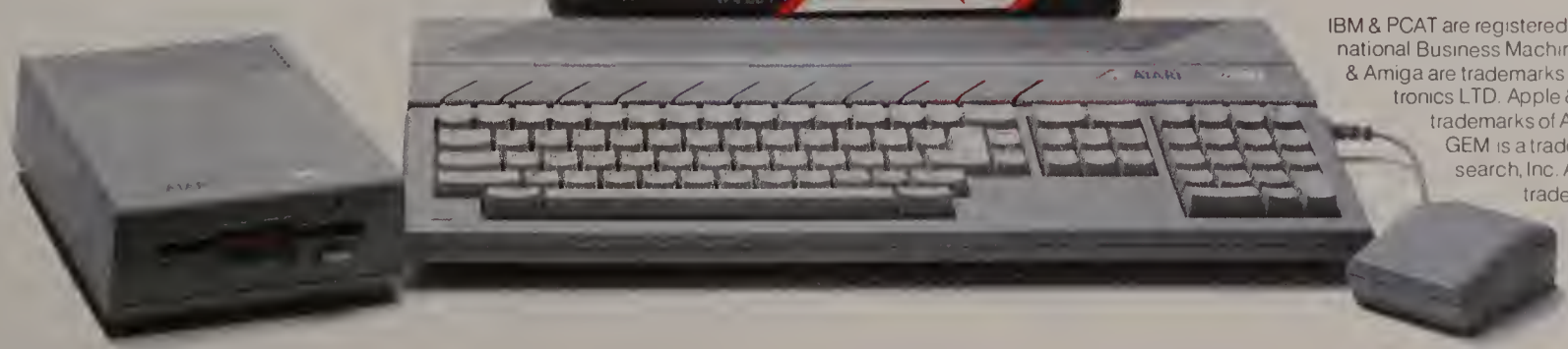

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HYPERDRIVE ANNOUNCES THE LIBERATION OF 400,000 MICE.

This message is for the several hundred thousand people who bought a Macintosh because of its user-friendliness—and then found it a bit slow in expressing its affections.

For those who find themselves frequently feeding floppies. And waiting. And wishing the Macintosh's capacity for work matched its appetite.

For all those who've learned to live with these and a variety of other limitations, we're pleased to announce a richly rewarding un-learning experience.

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HyperDrive 20 is a new internal hard disk that, when installed in your Macintosh, makes it the World's Fastest Macintosh. Up to 15 times faster than a conventional Mac that runs on floppies.

In fact, as Personal Computing magazine put it, "Using a HyperDrive compared to a regular Macintosh is akin to cooking with a microwave oven instead of a gas range."

This rather heady level of performance may be attributed to a simple principle of engineering: Macintoshes, like human beings, travel faster and better when unencumbered by excess luggage.

Unlike all other hard disks, which are external, HyperDrive connects directly to the Macintosh's microprocessor. This gives it an insurmountable lead over external disks—which, since they have to slow down to talk through one of the Macintosh's ports, will forever lag behind.

A FAREWELL, OF SORTS, TO FLOPPIES.

The HyperDrive 20 hard disk holds as much as fifty floppies (twenty megabytes). And if it holds them, you won't have to.

But besides holding more information, HyperDrive manages it more intelligently.

It recognizes, for example, that files are organic creations, with a tendency to grow with their own special urgency to their own self-determined size. HyperDrive is engineered accordingly.

It lets you divide your disk into 32 file drawers, each holding up to 512 files. These files automatically re-size, swelling or shrinking according to what you put in or take out. Which lets you use storage space according to your dictates, instead of your computer's.

POWERFUL ENOUGH FOR POWERFUL SOFTWARE.

HyperDrive 20 will run all Macintosh programs, including Apple's new Switcher. And it will run them faster.

MANAGE HUGE AMOUNTS OF INFORMATION, INSTEAD OF HUGE AMOUNTS OF FLOPPIES.

But HyperDrive 20 will also run programs that the regular Macintosh, for all its friendliness, lacks the sophistication to handle effectively. Programs such as Lotus' Jazz, for

VAST DIFFERENCES IN PERFORMANCE. A TINY DIFFERENCE IN APPEARANCE.

example. And Microsoft's Word. Powerful business software that can multiply a Macintosh's performance and productivity.

HyperDrive 20 also comes with its own software that elevates both the friendliness and the sophistication of your Macintosh.

Such as a backup program, unsurprisingly named Backup, that lets you back up and restore information from the hard disk to and from your floppies.

There's even a print spooler that lets you use your Macintosh for other jobs while your printer is busy churning out the one you just finished.

VAST VS. TWICE AS VAST.

For all its emancipating qualities, there's one item that HyperDrive won't liberate you from. The Apple warranty.

Even though your Macintosh must be opened (by an Apple dealer) to install HyperDrive, your warranty remains intact. But Apple won't be the only one watching over you.

HyperDrive is further backed by our own 90-day limited warranty and an optional HyperCare extended service contract. And service is readily available at participating Apple dealers nationwide. (See your nearest dealer for complete warranty details.)

In fact, the only imaginable problem left unattended by HyperDrive is that of deciding which to buy—HyperDrive 10 or HyperDrive 20.

That will depend largely on how much capacity you need: vast or twice as vast.

You can make that determination by visiting a participating Apple dealer and seeing HyperDrive in action. Or call us at (800) 422-0101 or (617) 492-5500. In Canada, call our distributor at (800) 565-1267.

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M.U.G. of Corvallis

Macintosh Users Group Of Corvallis
P.O. Box 1912 Albany, Or. 97321
24 Hour Hotline (503) 928-1270

Mr. Chris Davis
DataPak Software, Inc.
14011 Ventura Blvd. Suite 402
Sherman Oaks, Ca. 91423

07/03/85

Dear Chris;

Congratulations! Your program "My Office" has been chosen as "Program Of The Year" by our product review committee. This group was formed early in the year to review the many programs available to our members and recommend only the best buy(s) in each catagory to them.

When you consider that your competition for this award included Jazz by Lotus, Word and File by Microsoft, and Helix by Odesta to name just a few, winning it becomes quite an accomplishment! The fact that "My Office" retails for only $129.00, some $466.00 less than the much touted Jazz, makes it a truly astounding accomplishment!

The criteria for the catagory "Program Of The Year" while simple, was also the most difficult to meet. Simply stated the chosen program would have to be the most useful program for the greatest number of users whether their needs were for business, home, or recreational purposes. The program also had to be easy to use and have been released between July 1st of 1984 and June 30th of 1985.

"My Office" met all requirements and passed all normal usage tests without a single error message. In addition every effort was made to destroy the integrity of the program by changing fonts and installing and removing desk accessories at random and more often than would normally be done by the average user. We then attempted to customize it (successfully I might add) with Resource Editor, Fontastic, and various other hackers tools. It not only survived and retained it's integrity during all this, it performed flawlessly! Programmer Gary Crandall is to be commended for writing a truly bug free program.

We feel that we can freely recommended "My Office" to everyone who owns a Mac whether they intended to use it for home or business. You may consider this our endorsement of your product and use this letter, in whole or in part, as you see fit.

Yours Truly

Jerry Koszut

Jerry Koszut, Pres.

FIND OUT WHY WE WERE CHOSEN "PROGRAM OF THE YEAR"

my OFFICE
THE OFFICE SYSTEM FOR THE MACINTOSH

CIRCLE THE BINGO NUMBER BELOW OR CALL (818) 905-6419

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DATAPAK SOFTWARE INC. 14011 VENTURA BLVD., SUITE 402, SHERMAN OAKS, CA 91423

(continued from page 34)

It took 11 swaps to put the file on the *MacWrite* disk. Then it took another 40 to save the file before printing, 3 more to stop printing, and finally another 5 to close the file and open a new one. That's 59 in all. I may have missed a few, since I wasn't paying attention at the outset.

David Kelsey
Saint Albans, Hertfordshire
United Kingdom

Take a Number

Although I love your magazine, I do have a complaint. I wish all the pages could be numbered. Most pages with full-page ads are not. I know that the production process must make it difficult to number all the pages, but I was hoping that you could find a way. Thank you so much for doing such an excellent job on *Macworld.*

Richard L. Fortner
Unalaska, Alaska

According to our production department, most advertising pages do not have page numbers because doing so would restrict flexibility in ad placement and affect the design of the ads. Sorry, but you'll have to let your fingers do the counting.—Ed.

Correction

The fonts customization program *Fontastic* from Altsys was incorrectly priced at $39.95 in *Macworld View, Macworld,* August 1985. The correct price is $49.95. Our apologies for any confusion that may have resulted.

Mail your letters to Letters, Macworld, *555 De Haro St., San Francisco, CA 94107, or send them electronically to CompuServe 70370,702 or The Source BCW440. Published letters become the property of* Macworld. □

The C for the Macintosh

"Library handling is very flexible... documentation is excellent... the shell a pleasure to work in... blows away the competition for pure compile speed... an excellent effort."

COMPUTER LANGUAGES, 4/85

Why Professionals Choose Aztec C

Professionals choose Manx Aztec C development systems because they are the most powerful, portable, and professional microcomputer C development systems available. Professionals know that Manx Aztec C offers the features, dependability, and performance required for producing professional results.

Applications implemented with Aztec C development systems range from real time control of robot arms used in manufacturing, to message switching systems, to games, languages, operating systems, and business systems.

Much of the commercial software for the Apple Macintosh including top selling titles from software publishers Broderbund, Hayden Software, and Spinnaker is developed using Manx Azec C.

Value, Performance, and Flexibility

Manx Aztec C68k for the Macintosh is available as a line of three upgradable development systems: Manx Aztec C68k-p, Manx Aztec C68-d, and Manx Aztec C68k-c. Student, noncommercial, and small business discounts are available. Whatever your budget and requirements, there is a Manx Aztec C68k development system that offers you the best value and performance for your investment.

New Macintosh Mouse Interface

The highly acclaimed, powerful, and professional Manx Aztec SHELL development environment now includes a mouse interface. Developers unfamiliar with UNIX or MS-DOS can work entirely with the mouse interface. Those interested in learning the advanced features of the SHELL can do so at their leisure. Developer's familiar with UNIX or MS-DOS can ignore the mouse, if they so choose, and work entirely in a familiar command driven environment.

Aztec C, The Most Portable C.

Manx Aztec C Development Systems are available for the Apple Macintosh, Apple*II*, IBM PC, PC compatibles, CP/M-80 systems, Radio Shack Systems, and the Commodore 64/128. Manx Aztec C is also compatible with UNIX and UNIX ports. Manx currently is developing systems for the Amiga and other microcomputer systems. No other C Development System for the Macintosh comes close to the portability of Manx Aztec C.

Power To Spare

In benchmark after benchmark, Manx Aztec C appears in column after column as the clear winner.

The following sieve benchmark timings are reprinted with permissions of Computer Languages, 131 Townsend Sr., San Francisco, Ca 94107 from a Macintosh review that appeared in the April, 1985 issue:

compiler	compile/link	run	size
Manx Aztec	49	7	13,274
Megamax	114	7	13,816
Softworks	201	9	46,914
consulair	152	10	17,654
Hippo 2	102	13	30,648

The following sieve benchmark timings are reprinted with permission of Macworld, 555 De Harro St., San Francisco, CA 94107, from the May, 1985 issue from "Mac Wins By a Length" in the Open Window column.

Language	Run Time
Aztec C 1.06C	6.55
McFORTH 2.0	20.01
Modula-II	71.60
MBASIC 2.00	1170.00
Pascal	1270.00

Sieve timings for Manx Aztec C68k 1.06g:

with register variables 3.37 secs 5,007 bytes
without register variables 6.02 secs 5,140 bytes

Manx Aztec C68k - Professional Tools

Manx Aztec C68k is bundled with a rich abundance of tools to help produce superior results in reasonable time frames. The following is a list of features and facilities included in Aztec C68k-d, the Developer's System, and Aztec C68k-c, the Commercial system. Items that are marked -c are unique Aztec C68k-c.

Optimized C	Mouse Enhanced SHELL
UNIX-like SHELL	Creates desk Accessories
Macro Assembler	Creates Clickable Applications
Smart Overlay Linker	Phone Support
C-PASCAL Interface	PASCAL-C Interface
Resource Compiler	UNIX Library Functions
Debuggers	Terminal Emulator (Source)
Object Librarian	Easy Access to Mac Toolbox
Mouse Editor	unlimited code size
IEEE floating point	six register variables
Inline assembly	extensive sample programs
600 page manual	hard disk support
no license fees	PASCAL type strings
MacinTalk support	AppleTalk support
code optimizer	symbolic debugger (512k)-c
MacRam Disk-c	UniTools (ul, make grep, diff)-c
Library Source-c	One Year Of Updates-c

Summary

If you plan to program in C on the Macintosh or are currently doing so using a brand x C compiler, there is a Manx Aztec C68k system for you that offers the best value and the greatest degree of portability, power, and professional quality available.

Look around, evaluate, and compare. The more you look, the more you compare, the more you will see that Manx Software Systems has succeeded in its objective to provide you with the best C development system available at the best possible price. Then, give us a call, and join the 25,000 users who already know and enjoy the Manx Aztec C advantage.

Products and Prices

Aztec C68k-c Commercial System	$499
Aztec C68k-d Developer's System	$299
Aztec C68k-p Personal System	$199
C-tree database (with source)	$399
Lisa Kit	$ 99
MS-DOS → Macintosh Cross	$750

Discounts

Discounts are available for professors, students, independent developers, hobbiests, and small businesses.

How To Become an Aztec C User

To become an Aztec C user call 1-800-221-0440 or call 1-800-832-9273 (800-TEC WARE). In NJ or outside the USA call 201-530-7997. Orders can be telexed to 4995812.

Payment can be by check, COD, American Express, VISA, Master Card, or Net 30 to qualified customers.

Orders can also be mailed to Manx Software Systems, Box 55, Shrewsbury NJ, 07701.

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To get more information on Manx Aztec C and related products, call 1-800-221-0440 or 201-530-7997, or write to Manx Software Systems.

30 Day Return Policy

Manx has a 30 day return policy. If you don't like your Manx Aztec C development system, return it within thirty days for a refund. Refunds do not include shipping costs, and might incur a small restocking charge.

Distribution Of Manx Aztec C:

In the USA, Manx Software Systems is the sole and exclusive distributor of Aztec C. Any telephone or mail order sales other than through Manx are unauthorized. Aztec C is available from qualified retail outlets under license to Manx Software Systems.

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MANX

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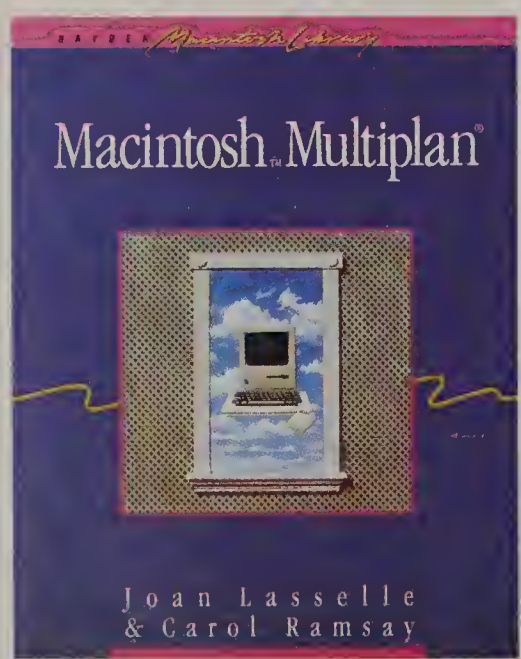

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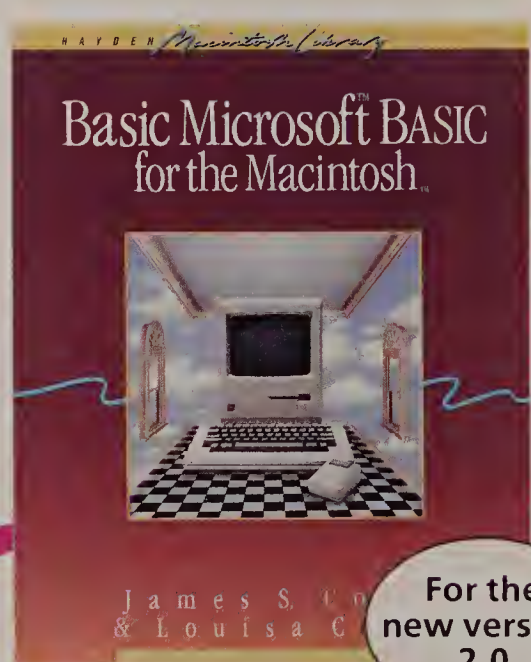

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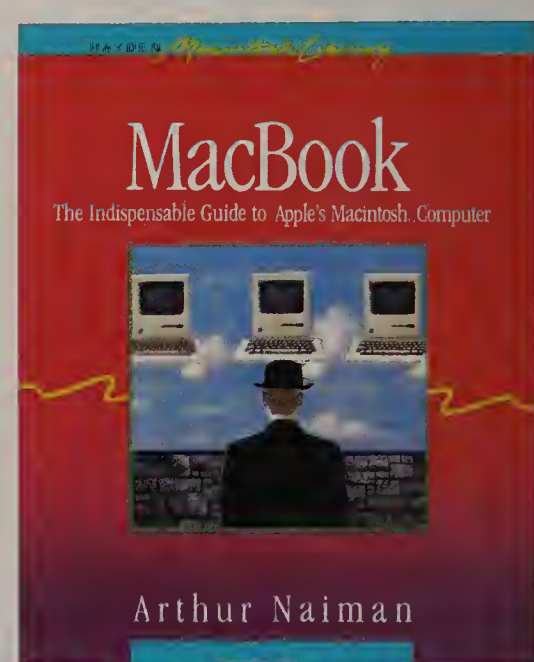
MACBOOK
The Indispensable Guide to Apple's Macintosh Computer

By ARTHUR NAIMAN. A one-stop source for every Macintosh owner who wants to maximize the use of his or her machine. First Naiman examines the assortment of printers, modems, and other hardware on the market. Then he moves on to a detailed critical assessment of the software available so that owners can better select programs suited to their needs. (#6560-4) $14.95



The HAYDEN Macintosh Library is available at bookstores and computer dealers, or order by phone: **800-631-0856 or 201-393-6300**

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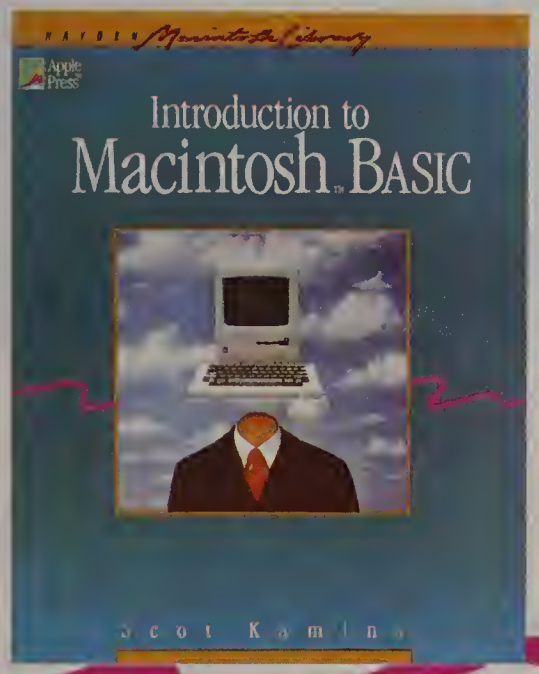
Library
WHERE YOU WANT TO GO

INTRODUCTION TO MACINTOSH BASIC
An Apple Press Book
By SCOT KAMINS. With step-by-step guidelines, Kamins illustrates how to use various built-in programming tools of Macintosh Basic, unique commands and programming instructions, the powerful Macintosh Editor, and special accessories for developing, testing, and debugging programs.
(#6550-7) $18.95



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Volume One: Unlocking the Toolbox
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By STEPHEN CHERNICOFF. Whether you are developing commercial Macintosh software applications or are an avid programming enthusiast, this two-volume set reveals and explains all the major ROM routines of the Macintosh Toolbox and puts them at *your* command so you can create programs that adhere fully to Apple Computer's Macintosh User Interface Guidelines.
Volume One: (#6551-5) $24.95
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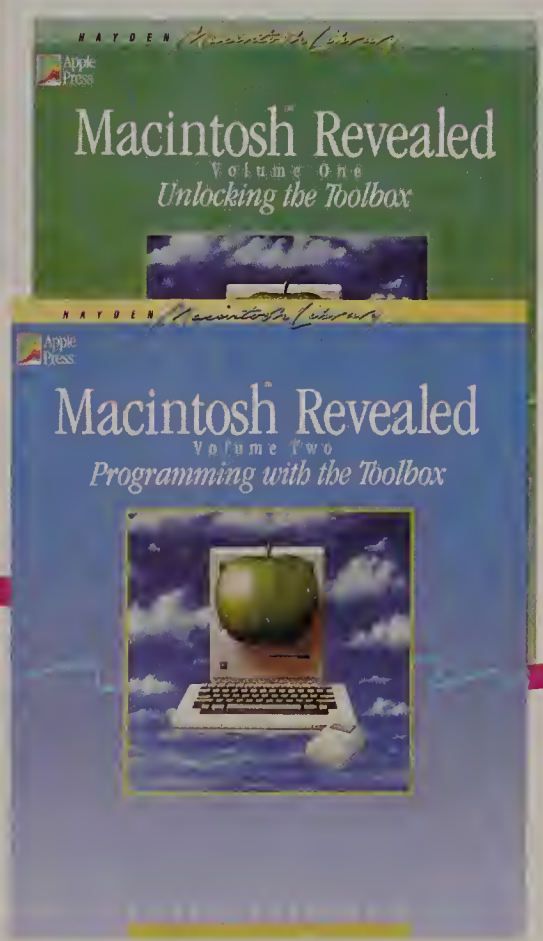

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By JONATHAN D. SIMONOFF. Become fluent in Pascal programming on the Mac with this introduction that helps build programming skills with real-world applications. Learn how to design and link programs for desktop accessories (such as an electronic address book, automatic telephone dialer and more) and to exploit the full potentials of QuickDraw, the mouse, sound capabilities, and the unique desktop environment of the Mac.
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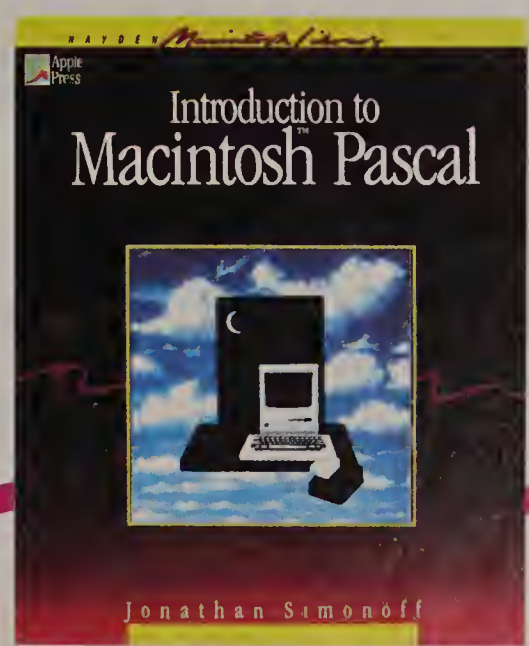

Hayden Book Publishers and Apple Computer, Inc., have agreed to publish the Macintosh Programmers' Series under an imprint called Apple Press. This imprint agreement marks Apple's and Hayden's joint commitment to quality computer books that most benefit their customers.

Apple Press

Apple Computer, Inc.'s endorsement:
"Apple believes that good books are important to successful computing. The Apple Press imprint is your assurance that this book has been published with the support and encouragement of Apple Computer, Inc., and is the type of book we would be proud to publish ourselves."

If you think you've played this game before, you're dead wrong.

Your head is pounding with a bump that's bigger than a cue ball. Your clothes are stained with blood that's, frankly, not your type. And the overcoat that hangs by your side hides a warm revolver. As you stumble from room to room, nothing is familiar. Especially the stiff slumped over the desk.

It all adds up to one thing. *Deja Vu, A Nightmare Comes True,*™ the exciting new state of the art Mindscape adventure designed specifically for the Macintosh.™

And because everything you encounter in this bizarre maze reacts to your every move, there's only one person who can control the outcome of this mystery. And guess what? Only you can clear yourself of the murder.

So pick up Mindscape's new *Deja Vu* graphic/text adventure. It's like no other software program you've ever experienced.

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Macworld View

Personal networks, plotting the course of Halley's comet, the Macintosh in the greenhouse, Mac paper airplanes, and more

Edited by Herschel Schmedick

I suspect that many of you reading this column have had strange or enlightening encounters with the Macintosh. Or perhaps you've heard of someone else's unique application of the Mac. Your contributions are welcome. Macworld *pays up to $50 for each item published. Send your contributions to* Macworld View, *555 De Haro St., San Francisco, CA 94107. I look forward to hearing from you.*

Netweaving

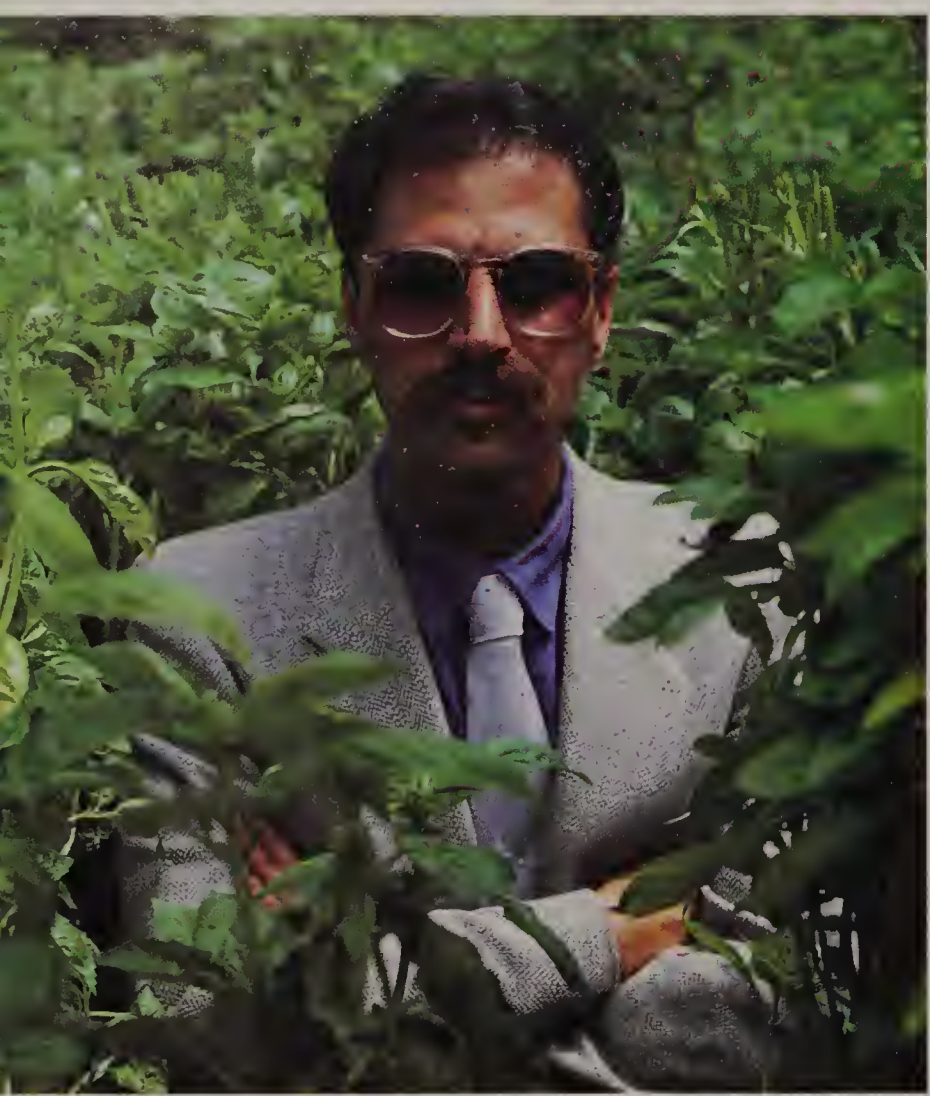
The philosopher Heracleitus of ancient Greece said, "Change alone is unchanging." Some changes, like the passage of time, are inevitable, but becoming part of the age of electronic communications is a change I've tacitly resisted for years. Yes, a computer is far superior to a typewriter or a calculator, I reasoned, but telecommunications is too technical and void of humanity. Lately, however, my attitude has changed.

What inspired me to enter the realm of electronic communications is Dean Gengle's *The Netweaver's Sourcebook: A Guide to Micro Networking and Communications* (Addison-Wesley, 1984). The premise underlying Gengle's book is: "Our society has one foot in the Information Age and the other in the fifteenth century. This creates collective symptoms of what social critics, mystics, philosophers, novelists, futurists, and academics have been telling the human race for several years now: that our scientific and technological powers have far outstripped our moral and intuitive/spiritual and ethical capacities. If the latter do not develop, we have been warned over and over again, we will destroy ourselves with the former."

Gengle states that to come to grips with the diversity of information made available by advances in communications technology, people should create personal communications networks based on goals and needs. His book provides the groundwork for constructing a personal network, with practical information on topics such as hardware, software, local area networks, downlink satellites, microwaves, protocols, and videodisks.

Now, armed with a Macintosh, a modem, and a communications program, I'm weaving my own network—downloading programs from CompuServe and The Source, gathering financial information from the Dow Jones News/Retrieval service, and communicating electronically with people all over the world.

The Garden of Macintoshes



Genisis Technology's chairman Steve Schorr stands up to his ears in his work—a basil crop grown aeroponically, monitored by the Macintosh.

Nestled in the foothills of the Rocky Mountains near Boulder, Colorado, an experimental greenhouse shelters basil and other culinary herbs. The leaves of the plants almost reach the roof of the building. But unlike most greenhouses, this facility produces crops by aeroponic methods. The dense, sinewy roots of the plants dangle freely in the air, periodically sprayed by a fine liquid mist of chemical nutrients.

In the midst of the lush greenery, Rick Stoner, president of Genisis Technology, Inc. (GTI), the company that developed the high-tech greenhouse, types data into a Macintosh. He uses the Mac to keep track of changes in the nutrients fed to the plants and to monitor the pH levels of water moving through the system. Information gathered on the Mac is then forwarded via modem to greenhouses using GTI's patented aeroponic growing system elsewhere in the United States and in Oman, Nigeria, and Saudi Arabia.

A business that stayed away from computers because they were too difficult to use, GTI has taken to the Macintosh. The company started with one Macintosh at the beginning of the year and now has four Macs and a LaserWriter. According to executive vice president Mike Krell, "We use the Mac in our offices to update our business projections and create project feasibility studies for prospective clients. Other computers have similar capabilities, but the ease of use and the quality of the output make the Macintosh and the LaserWriter ideal for marketing presentations. We used to pay a graphic artist $25,000 a year for what we now do ourselves with the Mac."

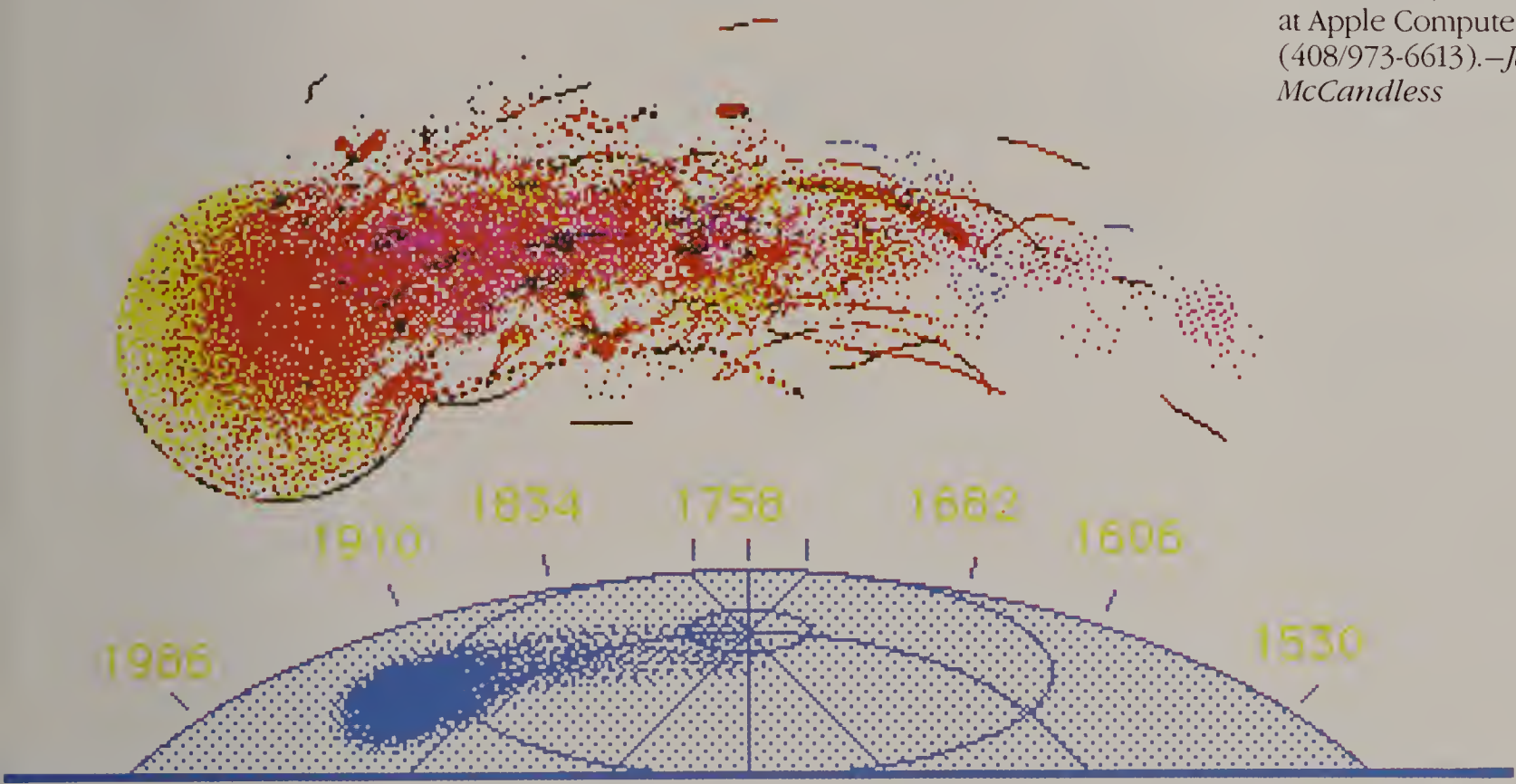
GTI also plans to use the Macintosh to automate its growing system. "Normally, someone must constantly monitor and control the greenhouse temperature, humidity, and lighting, as well as nutrient formulas and other factors. Now we can create a program using the Mac's graphics capabilities to handle those duties," explains GTI chairman of the board Steve Schorr.

In addition, GTI plans to set up a network bulletin board system to provide information to its clients. A client in Saudi Arabia, for example, could send data to query a GTI computer, which would interpret the data and send an answer within minutes. Schorr voices a sentiment felt by many companies using the Mac: "The Macintosh opened our eyes to the potential of applying computer technology to our business in ways we hadn't conceived of before."—*Michelle Egger*

Mac Tech Training

If you're looking for a guru to lead you through the difficult parts of developing a Macintosh product, you might want to enroll in one of Apple's Macintosh Technical Training courses. The three-day workshops are given every two weeks at different Apple sales offices across the country and taught by members of Apple's elite technical support staff.

The first day of the workshop can be taken separately as a basic introduction to the Macintosh Development System, while the full three-day session presents the system in depth and includes lectures and hands-on practice with development tools. Participants debug and compile sample applications and create a small application program. To find out about local schedules for the courses, contact Patti Blair at Apple Computer (408/973-6613).—*Janet McCandless*



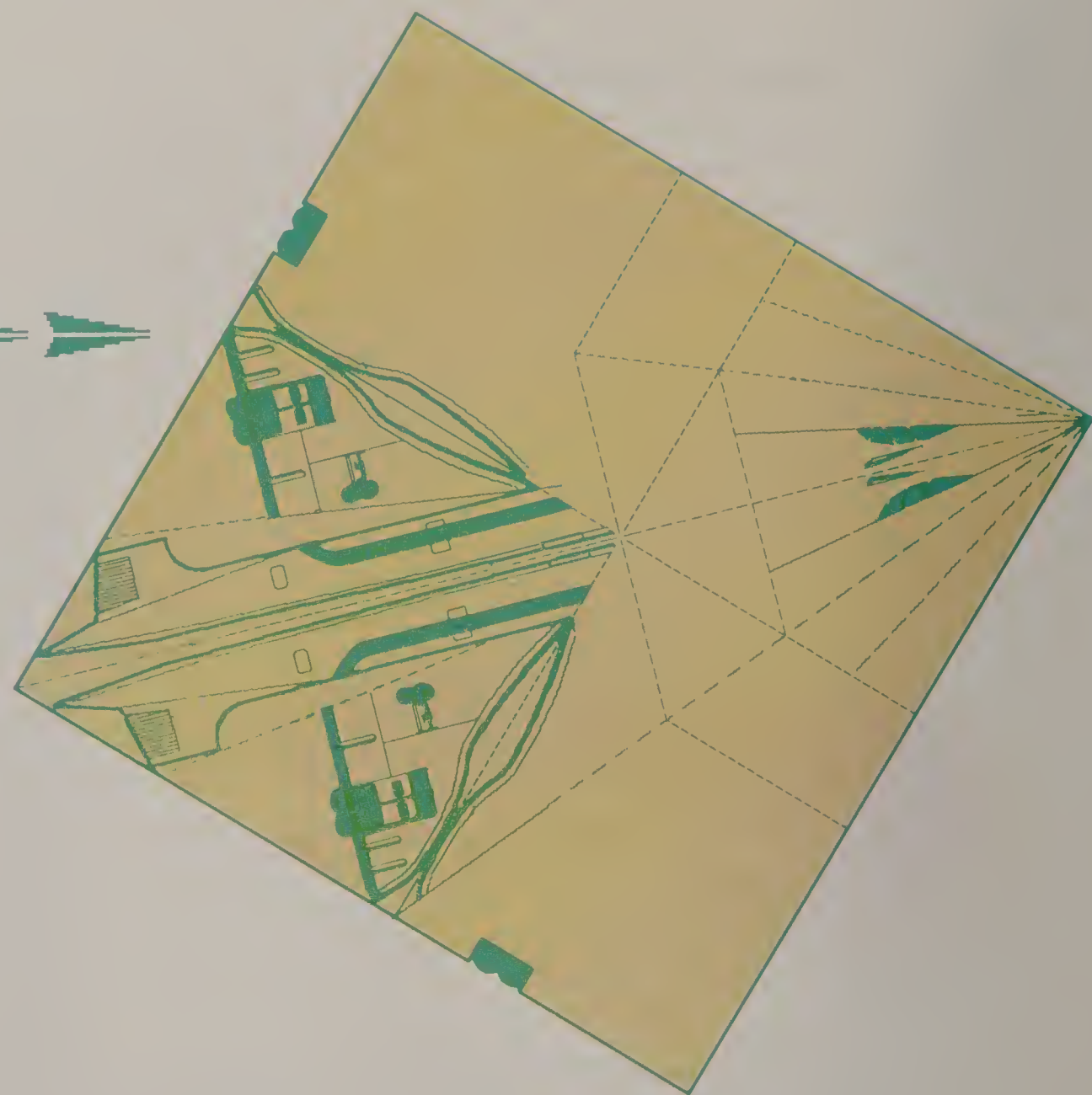
Mac Astronomy

In A.D. 1066, at the height of the Norman conquest, William the Conqueror and his troops stopped in their tracks, terrified by a portentous light that flashed through the night sky. The rank and file fled to their huts and prayed for salvation. One of the court artisans recorded the occurrence of the light in a large tapestry. Medieval astronomers began to notice that this light reappeared in the sky at least once every century. By 1910, knowledge had dispelled any fear of this celestial phenomenon, and Edmond Halley had charted the comet and named it after himself. Halley calculated that the comet's orbit passes close to the Earth once every 76 years. Halley's comet will approach the Earth during the latter part of this year and the beginning of 1986.

With a telescope, a Macintosh, and *MacStronomy,* you can invite this once-feared light into your hut for closer inspection. *MacStronomy* (Alphabyte Software, 303/665-3444) displays a celestial map with the stars, the moon, and the planets in their proper locations. The program can plot the location of Halley's comet or other celestial bodies for any location, date, and time and shows the comet's orientation to the sun and the planets on an alternate map. *MacStronomy* can also search a database of celestial objects for a specific celestial body, display its coordinates, center it in the sky map, and print a description of that body.

Observing Halley's comet is a once-in-a-lifetime opportunity. Don't miss this chance to see the historic light that made William the Conqueror tremble and Halley famous.—*David Turin*

International Airplane Construction Kit



Remember the days of spending hours at the kitchen table constructing paper airplanes? After making intricate folds in the wings and pasting insignia on the fuselage, you went to the backyard to test your creation. Your airplane spun and looped its way through the trees and telephone wires, invariably landing in the neighbor's vegetable garden.

In this age of computer-aided design and manufacturing, it is only natural that you can now use a computer to help create paper airplanes. Neosoft's Great International Airplane Construction Kit, distributed by Simon & Schuster, lets you select an award-winning paper airplane design, trim it with aeronautical designs, and print it on the Imagewriter. The disk contains 19 paper airplane designs based on the winning designs from *Scientific American*'s first International Paper Airplane Competition. You can enhance the designs with the collection of aviation graphics on the disk, including windows, hatches, insignia, and even pilots with silk scarves. You can use the airplane designs on disk as inspiration to create your own paper airplane masterpieces. Most importantly, you don't need to worry if one of the planes crash lands—just print another.—*David Turin*

Macworld's Top 10 Best-Selling Business Software

Months on chart	Last month	This month	Product
4	3	1	*Microsoft Multiplan*, Microsoft
4	1	2	*Microsoft Word*, Microsoft
0	—	3	*Jazz*, Lotus Development
3	2	4	*Microsoft File*, Microsoft
1	5	5	*MacDraw*, Apple Computer
4	4	6	*Microsoft Chart*, Microsoft
4	8	7	*MacTerminal*, Apple Computer
4	6	8	*Dollars and Sense*, Monogram
4	9	9	*MacProject*, Apple Computer
4	7	10	*pfs:file*, Software Publishing

Source: InfoCorp

The ImageWriter II

Apple has introduced a second generation of the Macintosh's premier dot matrix printer, the Imagewriter. The new printer, appropriately christened ImageWriter II, offers several new features, including color capability. With the proper software and a color ribbon, the ImageWriter II can print in up to seven colors. The ImageWriter II also has greater print speed than the Imagewriter: 250 characters per second (cps) in draft quality, 180 cps in standard quality, and 25 cps in high quality. The original Imagewriter prints standard-quality text at about 120 cps. In high-quality mode the new printer's output borders on letter quality because Apple refined the pins on the print head and improved the dot placement. A sheet feeder, which allows rapid feeding of single sheets, is available as an accessory. When the AppleTalk option is released for the ImageWriter II, the printer will be able to tie into the AppleTalk network and be shared by several people. The printer's design is also improved: the unit tilts at a slight angle so you can see text more easily as it prints, and you can store continuous-feed paper underneath the cabinet. The new printer is also quieter than the original Imagewriter. The ImageWriter II works with the Apple II, the Apple III, the Lisa, and the Macintosh XL.–*Nicholas Lavroff*

Campaigning with the Mac

Peter Shapiro, age 33, is running an uphill campaign for governor of New Jersey. As he sits at his desk talking on the phone with fund-raisers, he leans back, keyboard on his lap, and types information into a Macintosh. Shapiro's campaign works with half a dozen Macs, used primarily for word processing and data management.

Peter Shapiro got his first Macintosh in March of 1984–a year before he began his campaign for governor. "I had seen the Lisa," he explains, "and when I heard that the Macintosh would be introduced at an affordable price, I couldn't wait to get one." Shapiro has a 512K Mac at home and another in his office in the Essex County Hall of Records, where he works as executive officer for the county, a sprawling urban section of northern New Jersey that includes the city of Newark. The county has so many different computers in use that compatibility was not a major factor in the selection of the Mac.

On the campaign trail, the Mac helps put the large number of volunteers to work, says Bob O'Sullivan, coordinator of issues for the November race. "We can give volunteers a minimum of training, and they can be immensely useful, either typing in *MacWrite* or entering data with *Microsoft File*."

On a typical day Shapiro sends and receives an assortment of messages via the Macintosh. The candidate quickly answers queries from secretaries and staff assistants, using boldface type to highlight his responses, which can then be reworked into memos, press releases, or letters.

Keeping track of finances is another important aspect of the campaign. Compliance with state regulations for reporting contributions and for disbursements of funds is handled with *Multiplan*. For the financial records a hard disk is needed, but the rest of the office functions with floppy disks. As the campaign progresses and the databases grow, dependence on the Mac increases. "There is a lot of pressure in the last weeks of the campaign," says O'Sullivan, "and each hour we save will be valuable. I wish we could operate the Macintosh from our cars."–*Neale McGoldrick* □

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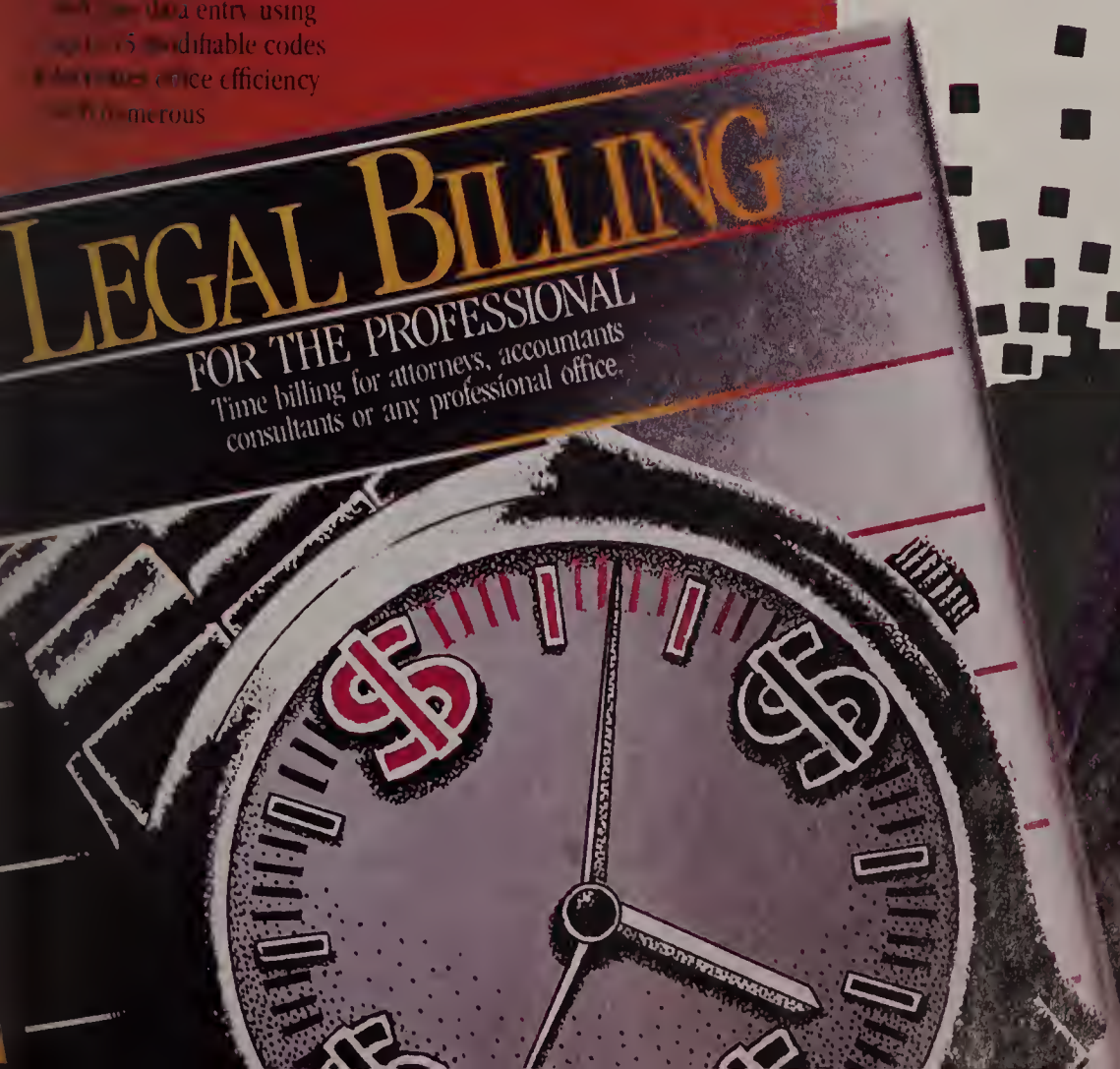

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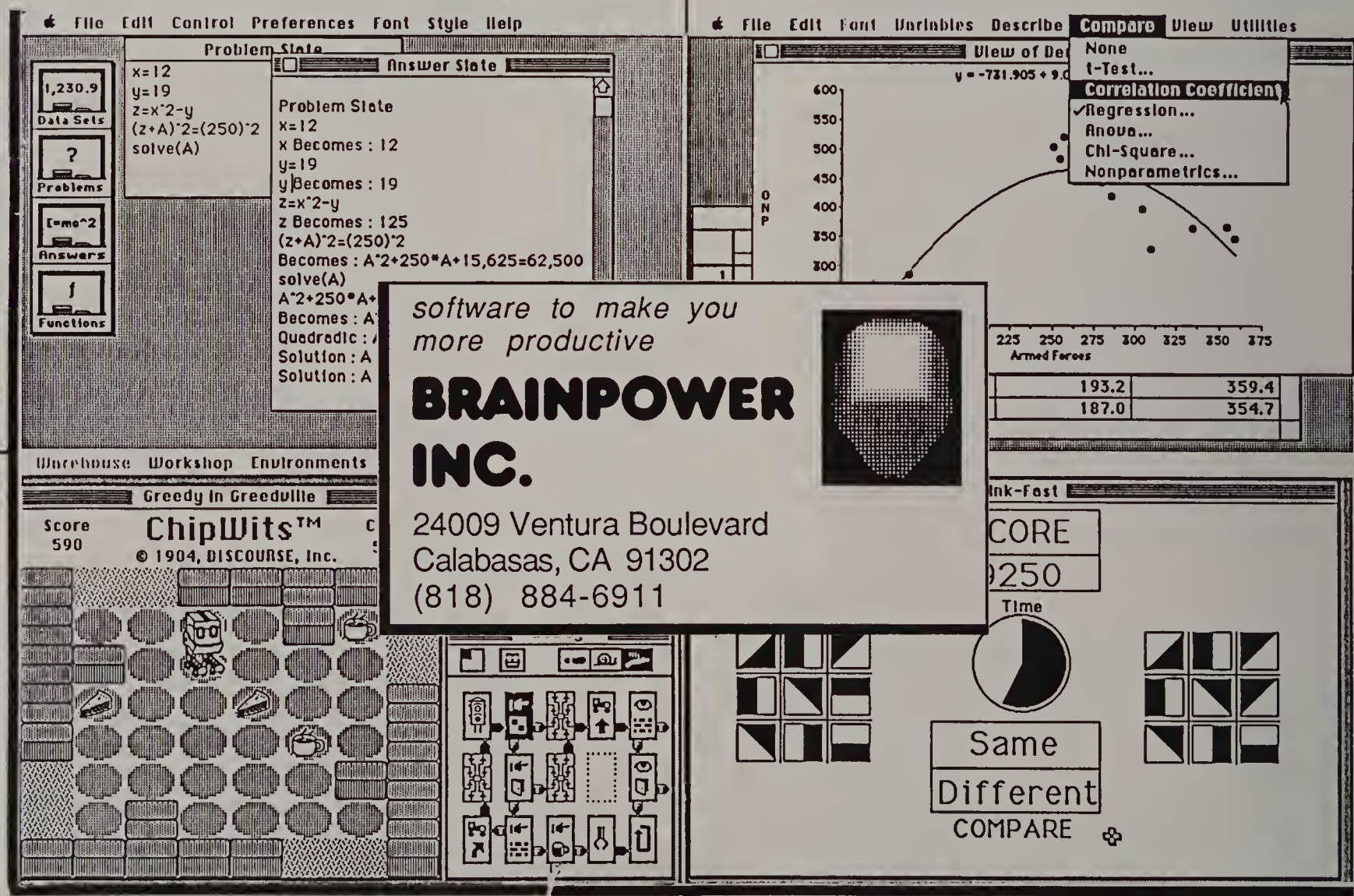

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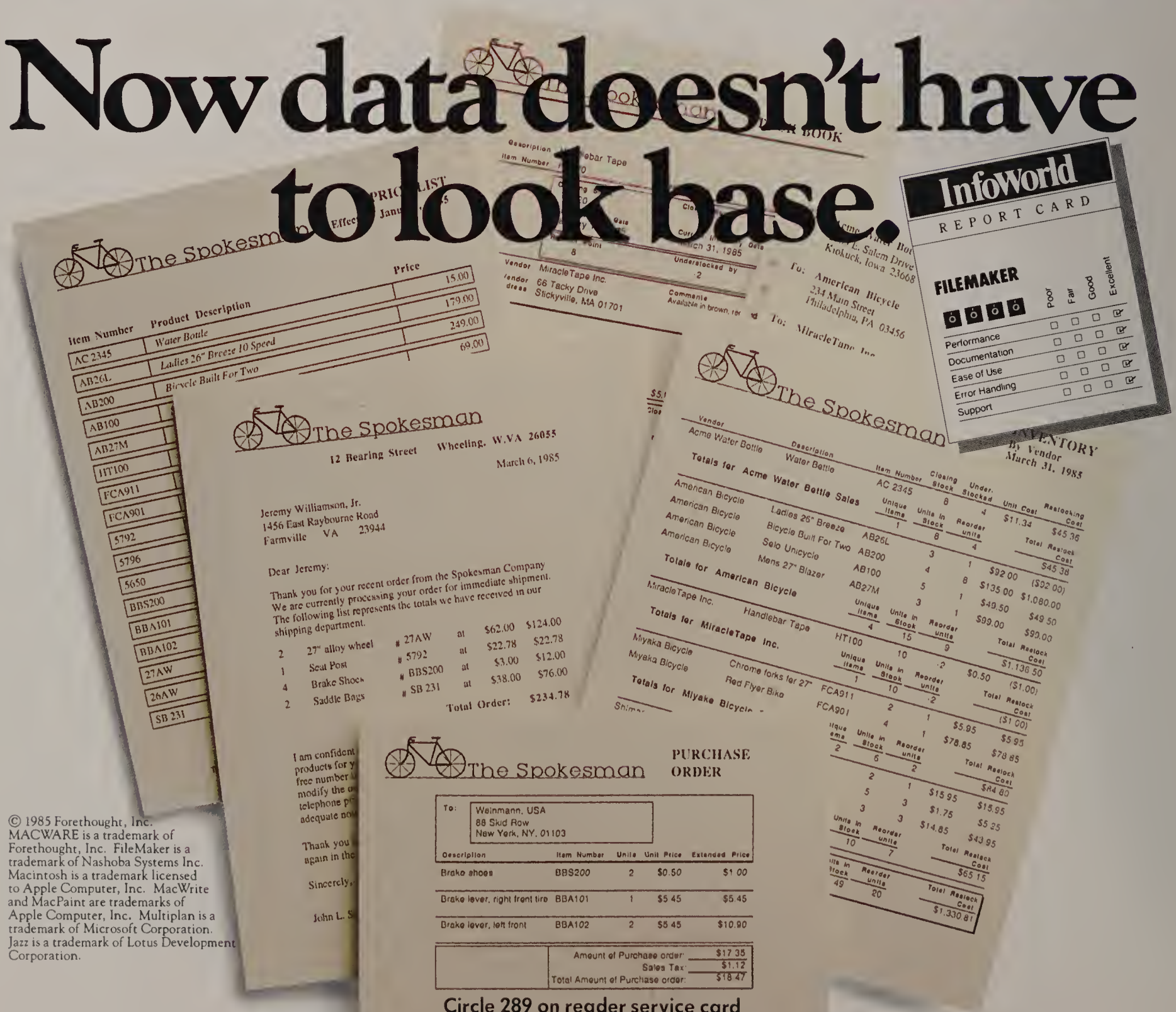

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Circle 289 on reader service card

Get Info

Macworld's tutor answers questions about custom patterns, stereo Mac, and MacPaint geometry

Lon Poole

This month *Get Info* deals with topics ranging from saving screen information in *MacTerminal* to connecting the Macintosh to a stereo system. One reader wants to print a catalog of *MacPaint* documents stored on a disk other than the program disk. A wayfaring reader wants hints for operating the Mac and the Imagewriter in foreign lands. And a reader from England is looking for a *MacPaint* geometer to help him construct an equilateral triangle and locate the center of a circle.

Several readers have also written asking how to handle wide *MacWrite* and *MacPaint* documents. Those who program in Macintosh BASIC and use the fill patterns with the Mac's QuickDraw routines may be interested in a technique for designing custom patterns.

Also, I want to correct an error that appeared in the August 1985 *Get Info*. I quoted the price of Plugh's *Dayton Fonts* at $15, when in fact the price is $31.95. Plugh does, however, have a policy that allows you to copy *Dayton Fonts* from a friend and then register your copy for $15.

Saving MacTerminal Sessions

Q. I use *MacTerminal* to call an IBM host computer. How can I save a copy of the on-line session?
Michael J. Beurmann
Vernon, Connecticut

A. *MacTerminal* normally keeps an automatic log of a communications session. Every 15 seconds, text that has scrolled off the top of the screen is recorded on disk. You can use the scroll bar during a lull in communications to review the information that's been saved so far.

At any time during an on-line session, you can save a copy of the logged information by choosing Save As from the File menu. *MacTerminal* saves the copy of the log in a *MacTerminal* document. Later, you can open the document with *MacWrite* or any word processing program and read, edit, or print it. The document also includes the current communications settings, but the settings disappear if you resave the document with a word processing program.

After saving the logged information in a *MacTerminal* document, you should clear the automatic log by choosing Clear Lines Off Top on *MacTerminal*'s Commands menu. That way, if you receive a second batch of information and want to save it in another *MacTerminal* document, you can do so without including the first batch.

You can also turn off the automatic log by choosing Don't Record Lines Off Top from the Commands menu. If you do that, the menu choice changes to Record Lines Off Top, and choosing it turns on the automatic log again.

MacPaint Catalogs

Q. How can I print a catalog of *MacPaint* documents that reside on disks other than the application disk?
Tony Lin
Houston, Texas

A. The Print Catalog command prints a catalog of the disk containing the currently open *MacPaint* document, regardless of which drive the disk is in. Therefore, open any *MacPaint* document that resides on the disk you want to catalog. With that document open, choose Print Catalog from *MacPaint*'s File menu. If the cata-

(continues on page 58)

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      END : REM ESC KEY PRESSED
300  IF A$ = CHR$ (32) THEN 320:
      REM SPACE BAR PRESSED
310  PRINT CHR$ (7);: GOTO 290: REM
       BEEP AND TRY AGAIN
320  HOME : PRINT : REM  PROGRAM
      STARTS HERE
330  LET D$ = CHR$ (4): REM CTRL-D
340  PRINT D$"MON C,I,O"
350  PRINT D$"OPEN DO'ER"
360  PRINT D$"WRITE DO'ER"
```

```
MONITOR
*FFOOL
FFOO-   A9 16      LDA   #$16
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FF05-   85 2E      STA   $2E
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FF0A-   A0 24      LDY   #$24
FF0C-   20 FD FC   JSR   $FCFD
FF0F-   B0 F9      BCS   $FF0A
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Circle 369 on reader service card

(continued from page 55)

loged disk and the *MacPaint* disk use the same drive, *MacPaint* will ask you to swap disks several times while printing the catalog.

Amplifying Macintosh Sound

Q. Is the Mac's audio output jack for connection to a speaker or to an audio amplifier?
Julian E. Gomez
Columbus, Ohio

A. The audio output jack lets you pipe the sound output from the Macintosh to an external speaker, audio amplifier, or even a tape recorder. The jack accepts a standard ⅛-inch phone plug. Electronics stores carry adapter cables that connect the monaural sound signal from the Macintosh to both channels of a stereo amplifier. Connect the cable to the audio output jack on the Macintosh and to the high-level input jacks on the amplifier or tape recorder. The Mac's sound output signal will overload low-level input jacks, which are designed to receive signals from a magnetic phono cartridge or a microphone.

Foreign Power

Q. I recently arrived in Brussels, where I will be using my Mac. In Belgium the power is 220 volts AC at a frequency of 50 hertz, compared to 115 volts AC at 60 hertz in the U.S. I know I can connect a step-down transformer to get 110 volts AC, but do I need to convert the frequency to 50 hertz?
Donald Z. Fisher
Brussels, Belgium

A. The U.S. model Macintosh and Imagewriter are designed to operate at 107 to 132 volts AC, at a frequency of 50 to 60 hertz. In Belgium and other contries with 220- or 240-volt power, you can operate a Macintosh and an Imagewriter with a 220V-to-110V step-down transformer connected between the Macintosh and the wall outlet. For the Mac, the transformer must be rated at 60 watts (60 VA) or higher. For the Mac and the Imagewriter together, the rating must be at least 240 watts (240 VA). Expect to pay around $60 for a good quality, grounded (three-prong plug) step-down transformer. Do not use a cheap voltage converter; it will ruin your equipment. For more tips for traveling, see "The Macintosh Passport" in this issue.

Fill Patterns in MBASIC

Q. The July/August 1984 *Open Window* describes how to create fill patterns with Microsoft BASIC (MBASIC). When I want to create a pattern, I have to convert the pattern's bit image to a series of 16-bit binary numbers, then convert the binary numbers to hexadecimal or decimal numbers, and finally assign those numbers to an integer array. There's no problem unless the first bit of one of the 16-bit binary numbers is 1. Then, the decimal value of the number is greater than 32767, and BASIC gives an overflow error message. How can I represent a bit image whose pattern includes a number greater than 32767?
Christian Gingras
Victoriaville, Quebec
Canada

(continues on page 63)

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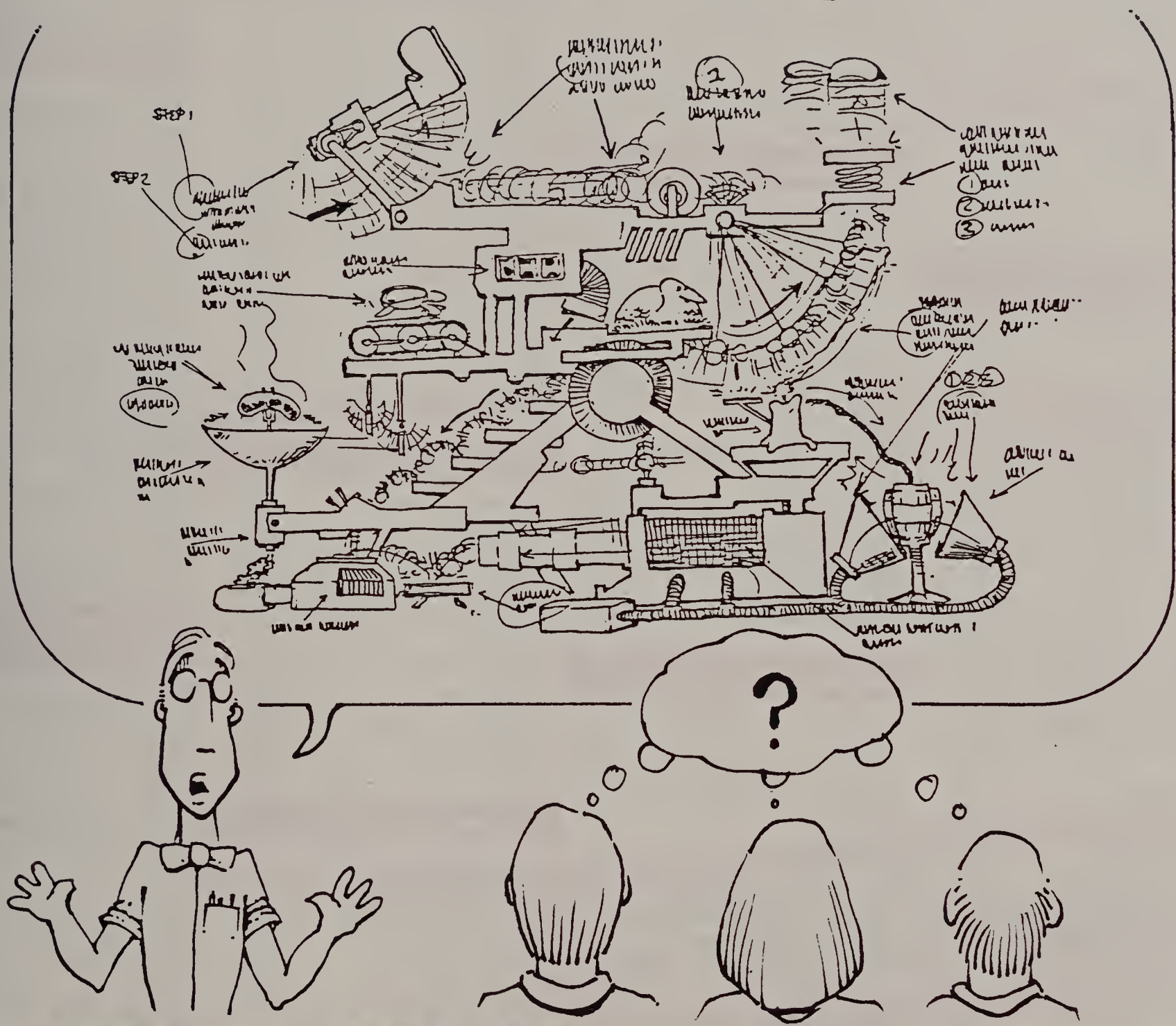
Some ideas need more than words and pictures.



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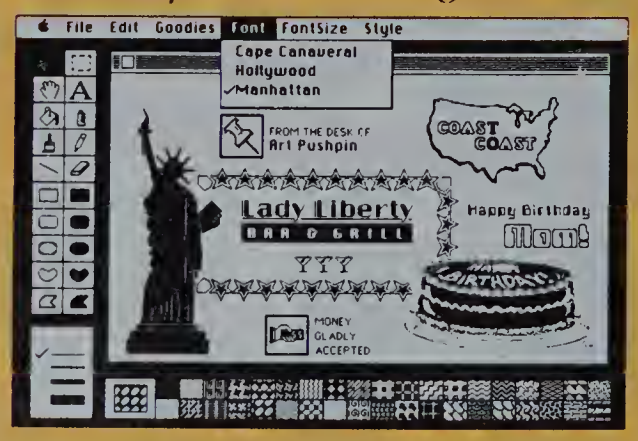

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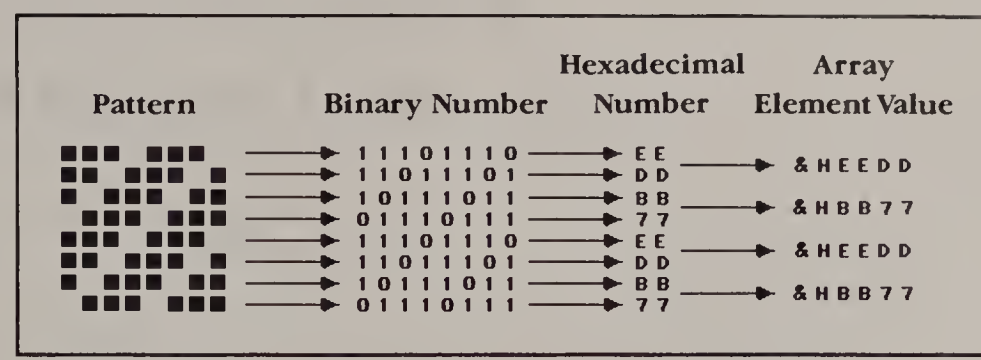
(continued from page 58)

A. The conversion from pattern image to integer array is straightforward if you use hexadecimal numbers and steer clear of decimal conversions. The overflow error message occurs only when you convert a 16-bit pattern whose first bit is 1 to a decimal number. Since MBASIC represents integer values internally as 16-bit binary numbers, you can use a four-element integer array to represent any 8-pixel by 8-pixel pattern image ($4 \times 16 = 8 \times 8$).

Here's the procedure for translating a pattern to hexadecimal values (see "BASIC Patterns"):

- Map out the 8-by-8 pattern on graph paper. The result resembles a FatBits image in *MacPaint*.
- Translate each row of the pattern to an 8-digit binary number, representing black pixels with 1s and white pixels with 0s.
- Convert the binary numbers to hexadecimal numbers. Eight binary digits yield two hexadecimal digits.
- The hexadecimal numbers for the first two rows are stored in the first element of the integer array: the first number becomes the left part of the array value, and the second number becomes the right part. Similarly, the third and fourth hexadecimal numbers form the second array element, the fifth and sixth numbers form the third array element, and the seventh and eighth numbers form the fourth element.

(continues on page 65)



BASIC Patterns

You can create custom fill patterns using Macintosh BASIC by converting each row of the dot pattern to a binary number and then converting each binary number to a hexadecimal number. The hexadecimal values for two consecutive rows make up one element of the integer array used to store the pattern.

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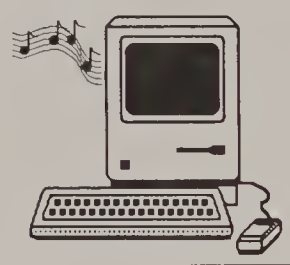

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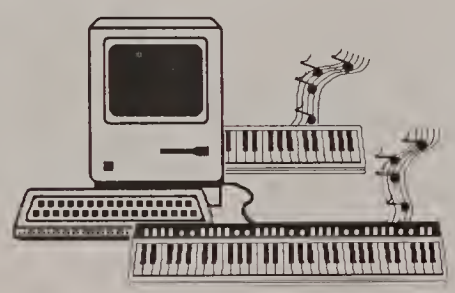

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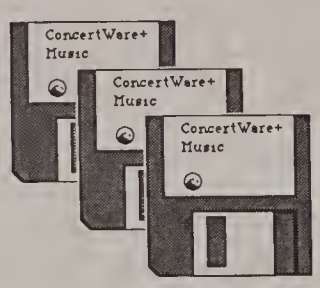

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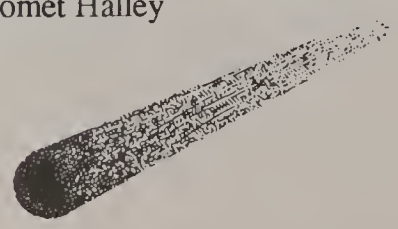

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Circle 166 on reader service card

(continued from page 63)

The sample program in Listing 1, which draws a striped black circle, demonstrates MBASIC's ability to handle integers in which the first of 16 binary digits is 1.

A Wider Road

Q. I read in the July 1985 *Get Info* about printing broadside on the Macintosh. While the Page Setup dialog box includes an option for wide orientation, I cannot figure out how to set *MacWrite*'s right margin at 10 inches to take advantage of the feature. Am I missing something?
Hal F. Seibert
Diablo, California

A. The limit of *MacWrite*'s document width is 7 inches. To bring the normally hidden right part of the document into view, you must move the entire document window to the left by dragging the title bar and then widen the window by dragging the size box to the right. Moving and widening the window lets you see up to an inch more of the right side of the document and allows you to set the right margin for an effective document width of 7 inches. At the same time, however, an inch or more of the left side of the document moves out of view. Typing on a wide document is awkward because you can never see the entire width at once.

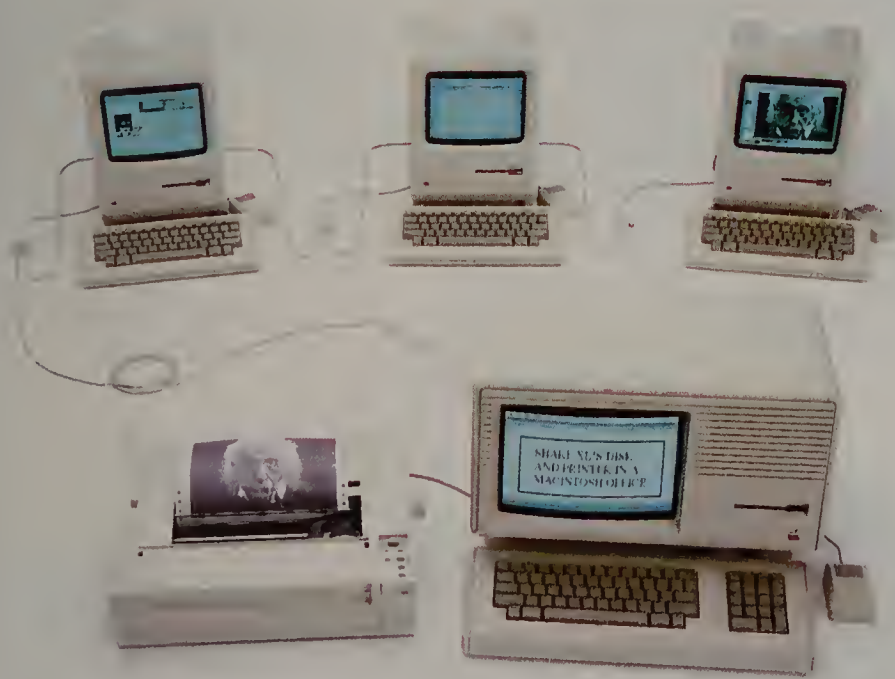
If you plan to create lots of wide documents, consider using *Microsoft Word*. It allows

(continues on page 67)

```
' Striped Circle Program

DEFINT E,S ' Variables beginning with E or S shall be integers
DIM EDGE(3),STRIPEPAT(3)

'Define the pattern

STRIPEPAT(0)=&HEEDD 'Equals binary 1110 1110 1101 1101
STRIPEPAT(1)=&HBB77 'Equals binary 1011 1011 0111 0111
STRIPEPAT(2)=&HEEDD 'Equals binary 1110 1110 1101 1101
STRIPEPAT(3)=&HBB77 'Equals binary 1011 1011 0111 0111

'Define location of circle

EDGE(0)=20 'Top of circle
EDGE(1)=20 'Left edge of circle
EDGE(2)=60 ' Bottom of circle
EDGE(3)=60 ' Right edge of circle

'Draw a filled circle

CALL FILLOVAL(VARPTR(EDGE(0)),VARPTR(STRIPEPAT(0)))
END
```

Listing 1
The Striped Circle program draws a circle filled with the custom pattern stored in the integer array Stripepat( ). The eight rows of dots that make up the pattern are stored as four elements of four hexadecimal digits each.

The Macintosh Office works.



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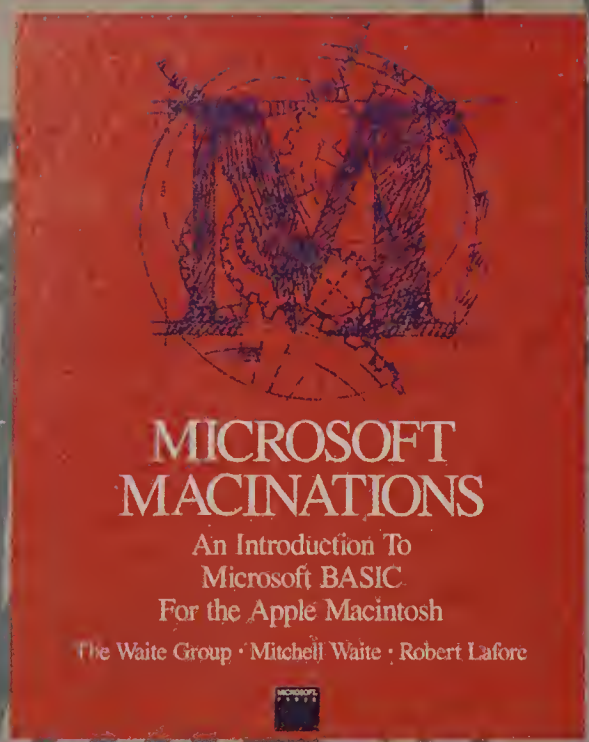

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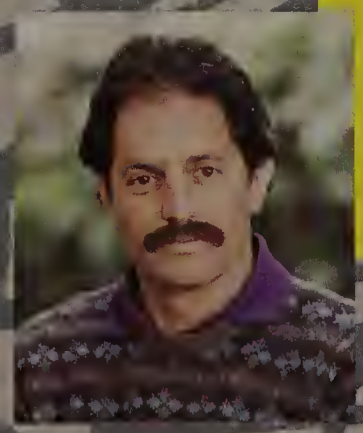

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Circle 376 on reader service card

(continued from page 65)

margins as small as ¼-inch on each side; with wide orientation on a letter-size page, a line can be up to 10½ inches wide, compared to *MacWrite*'s 7 inches. Also, *Word* automatically scrolls the document within the window as your typing approaches the edge of the window, or you can manually scroll the document with the horizontal scroll bar.

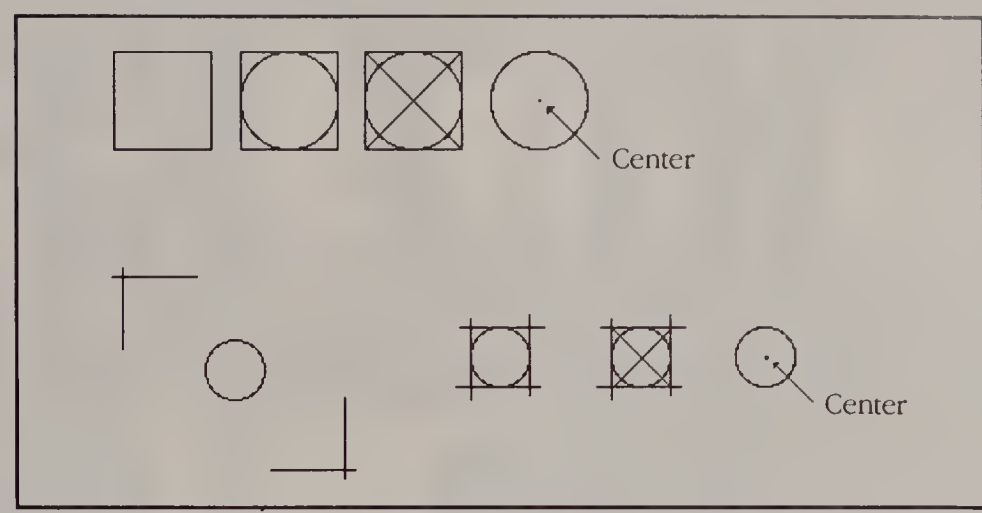
MacPaint Geometry

Q. What is the easiest way of locating the center of a *MacPaint* circle? How can I draw an equilateral triangle with *MacPaint?*
Ahmed Nasr Ghanem
Eastbourne, East Sussex
United Kingdom

A. To find the center of a circle, draw the circle inside a square, making sure the circle just touches each of the square's sides (see "Finding the Center of a Circle"). To draw the circle, select the hollow-oval tool, place the pointer exactly on the corner of the square, press the Shift key, and drag the pointer to the opposite corner. After drawing the circle, connect the opposite corners of the square with straight lines. The center of the circle is the point where the diagonals cross. Erase the construction lines with the pencil in FatBits.

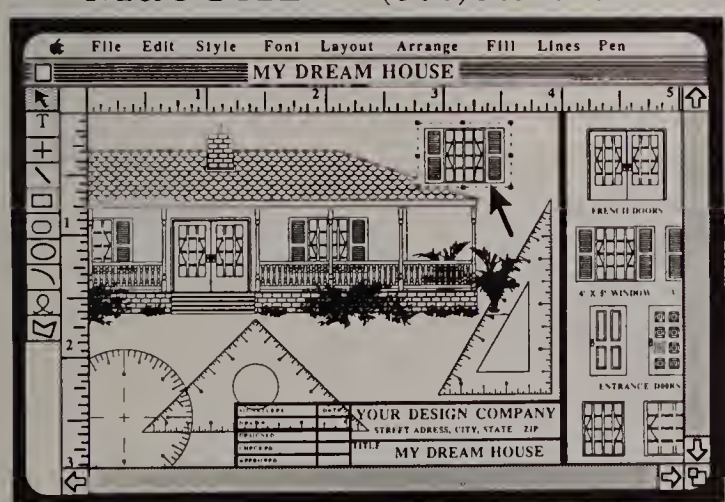
If you have already drawn the circle, you can construct a square around it. Using the straight-line tool, press the Shift key and draw a vertical line at least as long as the diameter of the circle, anywhere in the drawing window. Draw a horizontal line of about the same

(continues on page 71)



Finding the Center of a Circle
To locate the center of a circle in MacPaint, *enclose the circle in a square and then connect the opposite corners of the square. The center lies at the intersection of the diagonal lines.*

MacCAD (504)649-0484



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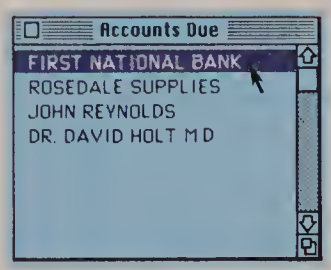

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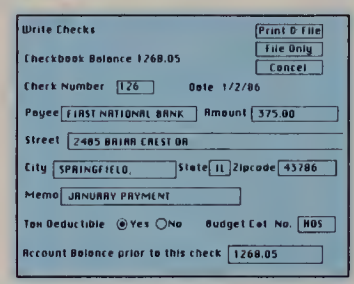

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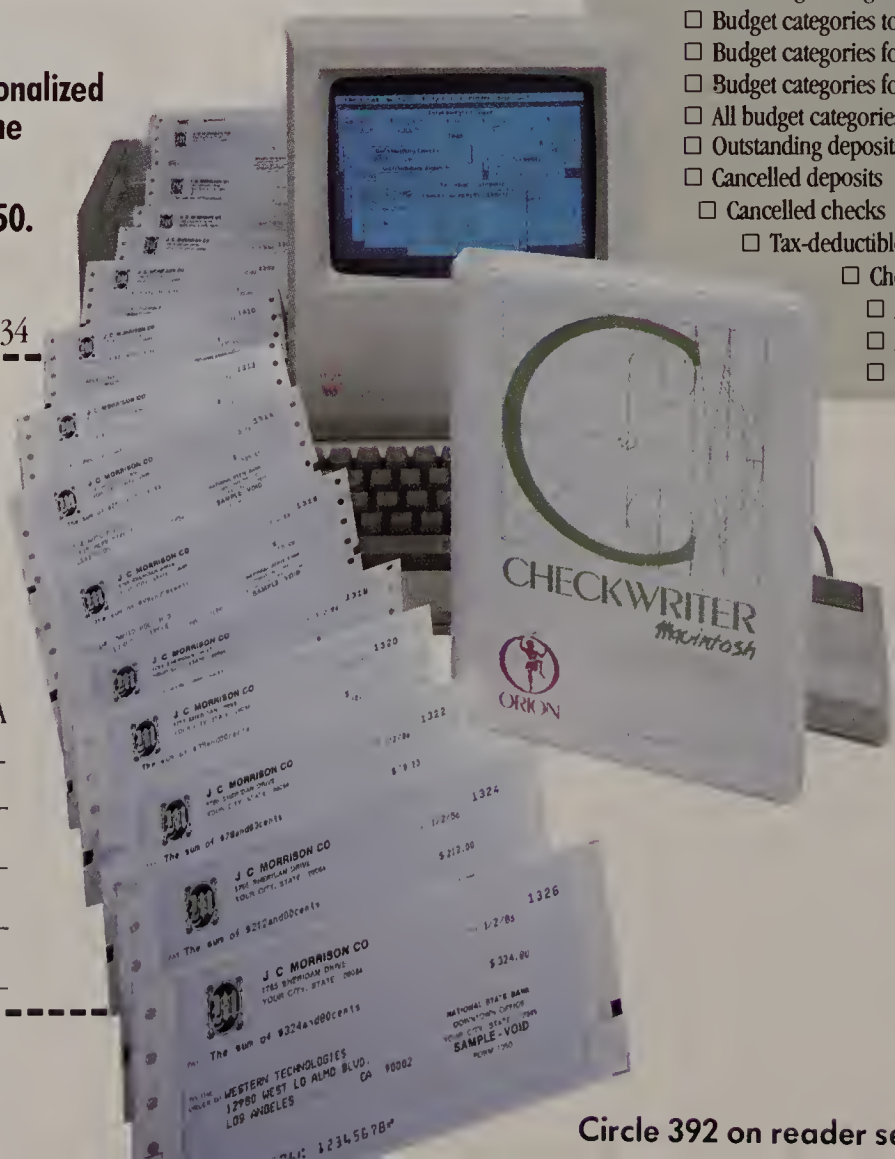

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(continued from page 67)

length to form a right angle with the first line. Select the right angle with the lasso, press the Option key, and drag away the copy of the angle.

With the copy still selected, choose Rotate twice in succession from the Edit menu. Next, lasso one of the right angles and drag it to the circle, so that it just touches the circle in two places. You must use the lasso; the marquee won't work. Do the same with the other right angle, and you have constructed a square around the circle. Connect the diagonally opposite corners to find the center of the circle, and erase the construction lines with the pencil tool in FatBits.

You need lots of work space in the *MacPaint* window to draw an equilateral triangle. Start by drawing a square whose sides are the same length as the side of the triangle you want to draw; use the hollow-rectangle tool while pressing the Shift key (see "Constructing an Equilateral Triangle"). Next, lasso the top edge of the square, hold the Shift and Option keys, and drag one copy of the selected line to the right and another copy to the left. The result is a line three times the length of the top of the square.

From each end of the top line, draw another square with sides twice the length of the original square. Inside each large square, draw the largest circle that fits (as described earlier). The circles intersect at two points, one above the base of the small, original square and another below the base. Draw lines from either intersection point to the two bottom corners of the original square. The two lines plus the base of the square form an equilateral triangle. Erase the construction lines with the eraser tool and the pencil tool in FatBits.

Copying Wide MacPaint Images

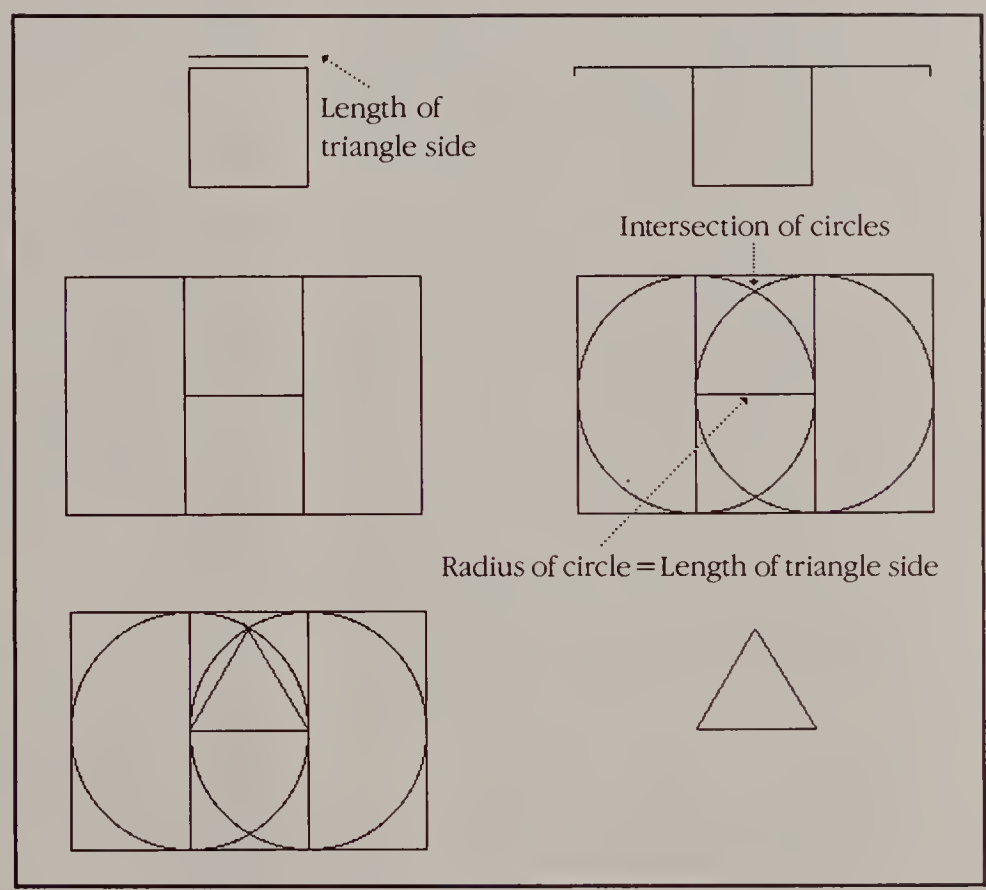
Q. Is there any way to cut or copy a *MacPaint* image that's wider than the drawing window?
Grant C. Schampel
St. Paul, Minnesota

A. Yes, but not with *MacPaint* itself. Art Grabber, a desk accessory distributed by Hayden Software (617/937-0200), allows you to copy an area up to 6¼ inches wide by 3¾ inches long from any *MacPaint* document to the Clipboard. A full-size *MacPaint* document is 8 by 10 inches. You can install the desk accessory in any System file, even on a disk without *MacPaint*. Art Grabber allows you to open and copy from any *MacPaint* document, on any disk, no matter what application you are using at the time.

You can also copy up to a full page of a *MacPaint* document with *Paint Cutter* from Silicon Beach Software (619/695-6956). By copying the image to the Clipboard, you can transfer the image to another application like *MacDraw* or *MacWrite*. However, unlike Art Grabber, *Paint Cutter* is a single-function application program, which means you must quit the application you're running before you can copy the image (see "On the Cutting Edge" in this issue's *Macware Reviews*).

Get Info *answers questions about the Macintosh and how it works. Most inquiries deal with application programs, but no topic is too elementary or too advanced. Send your questions about the Macintosh, Macintosh software, and Macintosh programming to* Get Info, Macworld, *555 De Haro St., San Francisco, CA 94107. Send electronic mail to CompuServe 70370,702 or The Source BCW440. The heavy volume of mail makes it impossible to personally reply to every question. All published submissions become the property of* Macworld.

Lon Poole is a Contributing Editor of Macworld. □



Constructing an Equilateral Triangle
To draw an equilateral triangle, start with a square. Then construct two overlapping squares whose sides are twice the length of the original square. The apex of the triangle is at the intersection of the two circles whose centers are the bottom corners of the original square.

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Boy, we're sure glad that Apple is promoting Mac as a business machine. Now they can do ads that are take offs on the light beer ads. (You know, "Tastes great!" vs. "Less filling!"). Picture two executives in a sushi bar, one in a three piece suit, the other wearing designer jeans and Reeboks. The three piece suit guy says: "More productive!" The other guy says: "More fun."

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Fontastic *(create your own fonts)* ..... $36.
Ann Arbor Softworks
Animation Toolkit 1 ..... 31.
Apropos
You must have Multiplan to use.
Financial Planning ..... 55.
Investment Planning ..... 55.
Arrays/Continental
Home Accountant ..... 59.
External drive recommended.
Assimilation
Mac·Tracks ..... 20.
Mac·Memory·Disk ..... 20.
Mac·Spell·Right ..... 58.
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Omnis 2 *(requires external drive)* ..... 139.
Omnis 3 *(requires 512k)* ..... 249.
Borland International
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BrainPower
StatView *(statistics package)* ..... 109.
Casady Company
Fluent Fonts *(two-disk set)* ..... $29.
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MacLion *(relational database)* ..... 189.
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Smoothtalker *(version 2.0)* ..... 59.
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Hippo-Lock *(file security program)* ..... 69.
Hippo-C - Level 1 ..... 79.
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Upgrade Hippo-C Level 1 to Level 2 ..... 139.
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Everybody wins!

NO CONTEST.

Our "We'd like to think you're a little strange" contest is over—and everyone who entered has won a distinguished, specially-designed T-shirt from MacConnection. We hope you've enjoyed the true Mac tales of our grand prize winners, and would like to thank the hundreds of strangers who entered for sharing their Macaberrations with us.

A FEW HONORABLE MENTIONS.

It sure wasn't easy choosing the winners. Just look at some of the amazing stories we had to leave out! Geologist *Al Faster*, who uses his Mac and MicronEye to detect significant rock outcroppings from aerial photos. Young *Kevin Woodward*, who cleverly used Mac and modem to woo back his old girlfriend. *Tony Burtone*, who takes his Mac in a hot air balloon to calculate lift vs. temperature, and volume versus weight. *Richard Shuren*, who hooked his Mac to a neutron probe to monitor irrigation schedules. *Binky Smith*, the dog who wouldn't take no for an answer. (Say what?) Police officer *Tyron Schneider*, who uses Mind Prober in ways we'd rather not think about. *Jeff Brown*, whose Mac almost got local hero Joe Gorilla elected to the Juneau, Alaska town assembly. *Dr. Lint Hutchinson*, who uses Filevision for dream analysis.

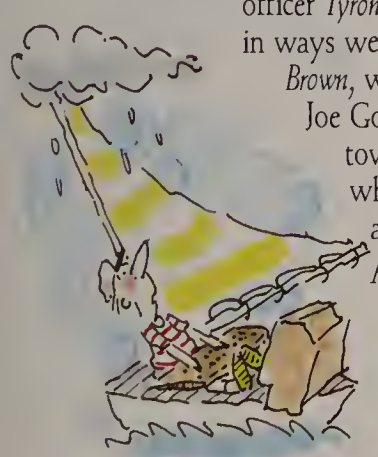
And *David Jenkins*, who accidently transferred an image of Boy George to the living room carpet while showing his kids how to use the Mac to make T-shirts. Canadian sailor *Michael Valcourt*, whose Mac worked swell in the swells. *Peter Ilchuk*, whose Mac and files were stolen in Key West's famous Applegate caper. *Dr. Brian Kay*, who designed a board game called "Computerize" on the Mac. *Reese Palley*, whose Mac travelled around the world, and kept track of spare parts. *Raymond Michels*, whose Mac helps keep proper wall and pipe temperatures in his igloo. *RaNu* of the Galactic Space Command, who uses his Mac in a never ending battle for truth, justice, and the American way. (Say when?) *Hilda Chaski*, who uses her Mac to explain plumbing codes to do-it-yourselfers. *Jacob and Michael Allison*, ages ten and five, who broke the Mac barrier in the national PTA art contest.

Then there's *Bill Drake*, author of "The Cultivator's Handbook of Marijuana," who now uses his Mac for research proposals on making Ethanol out of tobacco. (Is it rolling, Bill?) *John Bower*, who takes his Mac on tours of duty in a nuclear powered submarine. *Jerry Hasson*, whose Mac gathered evidence to convict a former partner of embezzlement, theft, and swindle. *Larry Erdman*, who uses the Mac to handicap college bowl games. *Dave Webb*, who manages his very own railroad depot with the Mac. *Joe Lewis*, who uses a Mac for special effects on television commercials and films. *Sue Linnabery*, who uses her Mac to write pattern instructions for historical fashions. *David Gutierrez*, whose Mac creates and prints messages for his custom fortune cookie company. *Mary-Anne Gustafson*, whose Mac has proven very effective in calming down unruly foster children.

And *Albert Martin*, who uses the Mac to write and draw weekly illustrated stories about Otis the Frog and Ansel Ant for his grandchildren. *Jon Pugh*, who uses his Mac at home to link up with his Cray Supercomputer at work—at the National Magnetic Fusion Energy Computer Center in Livemore, CA. *David Dvorak*, who uses his Mac to tune his harp. *Lamont Bassett*, who uses the Mac to cross correlate data on a migratory caribou in Canada.

And to all the marriages made or broken thanks to a Mac...To all the people who vowed they would never touch a computer until they met Mac...To all the cats who've been trained to draw instead of paw...To all the children who compute better than their parents...To all the grandparents whose second childhoods began with a Mac... To all the rectories, factories, technocracies, and art directories that have been computerized thanks to Mac...To all the scientists doing outrageous research in outrageous places... And to everyone else who entered.

Who knows what strangeness lurks in the hearts of men? Mac owners sure do. Stay as fascinating, off-beat, and plain-old-different as you are. We'll do our best to keep up with you.



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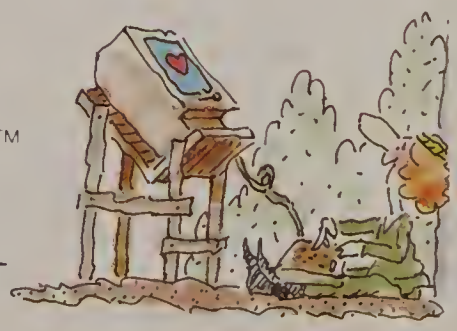

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Hitchhiker's Guide *(standard)* ..... 24.
Planetfall *(standard)*..... 24.
Wishbringer *(standard)* ..... 24.
The Witness *(standard)*..... 24.
Zork I *(standard)*..... 24.
Zork II *(advanced)* ..... 27.
Zork III *(advanced)*..... 27.
Infidel *(advanced)*..... 27.
Sorcerer *(advanced)* ..... 27.
Suspect *(advanced)*..... 27.
Deadline *(expert)* ..... 29.
Starcross *(expert)*..... 29.
Suspended *(expert)*..... 29.
Invisiclues (hint booklets) are available for any Infocom games. Specify game. ..... 6.
Mark of the Unicorn
Mouse Stampede *(highly addictive)*.... 23.
Miles Computing
MacAttack *(3-D tank simulation)*..... 29.
Harrier Strike Mission..... 29.
Mirage Concepts
Trivia *(new low price)*..... 19.
Origin Systems
Exodus: Ultima III ..... 38.
Superior fantasy adventure.
Penguin
Transylvania..... 24.
The Quest..... 24.
Pensate..... 24.
Can you make it to the top of the grid?

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Forbidden Quest ..... $25.
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Enter the world of high finance.
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Frogger ..... 24.
Ultima II ..... 35.
The ultimate fantasy role-playing adventure.
Silicon Beach Software
Airborne! *(great graphics and sound)* .. 21.
Soft-Life Corp.
Mac-Slots ..... 25.
The best one-armed bandit going!
Spectrum Holobyte
GATO *(submarine simulation)* ..... 27.
Telarium
Amazon ..... 27.
Dragon World ..... 27.
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Videx
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Klondike and King Albert Solitaires, Sevens, and Four in a Row.
MacCheckers/Reversi ..... 29.
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Compucable
Mac to Hayes Smartmodem cable ..... 17.
Mac to Epson FX/RX/JX printer cable .. 17.
Cuesta Systems
Datasaver AC Power Backup ..... call
Keeps Mac operating. 90 watts.
Curtis Manufacturing
All surge suppressors have an on/off switch.
Diamond *(6 outlets)* ..... 28.
Emerald *(6 outlets; 6 ft cord)* ..... 34.
Sapphire *(3 outlets; EMI/RFI filtered)* ... 44.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)* 50.
Epson
FX-85 ..... call
FX-185 ..... call
JX-80 ..... call
LX-80 ..... call
LQ-1500 *(letter quality dot matrix)* ..... call
Hayes
Smartmodem 300 ..... call
Smartmodem 1200 ..... call
Smartcom II *(communications software)* 89.
Compucable's Mac to Smartmodem cable 17.
IOMEGA
Bernoulli Box *(5-megabyte storage)* .. 1319.
5-meg Cartridge ..... 39.
Head Cleaning Kit ..... 59.
Johnathon Freeman Designs
Universal Printer Buffer ..... 175.
Kensington
External Disk Drive Cover 8
Mouse Pocket ..... 8.
Mac Dust Cover ..... $10.
Mac XL Dust Cover ..... 10.
Imagewriter Dust Cover ..... 10.
Wide Imagewriter Dust cover ..... 10.
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MacVision *(digitizer)* ..... 175.
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Microcom
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Upgradeable to 2400 baud.
Microsoft
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Additional ports and terminal software.
Mitsuba
Super 5 External Drive ..... 239.
Mouse Systems
A+ Optical Mouse ..... 59.
Paradise Systems
Mac 10 *(10 megabyte hard disk)* .... 1029.
Superex Business Software
MacSpeak *(external speaker)* ..... 15.
MacSpeak *(with earphone jack)* ..... 18.
Systems Control
MacGard ..... 55.
Surge and static protection, provides two outlets.

DISKS

Innovative Concepts
Flip & File *(Holds 40 disks)* ..... 19.
Pacific Wave
Flip Sort Micro *(Holds 40 disks)* ..... 12.
Flip Sort Micro *(Holds 60 disks)* ..... 15.
BASF 3½" Disks *(Box of 5)* ..... 15.
Verbatim 3½" Disks *(Box of 10)* ..... 25.
Sony 3½" Disks *(Box of 10)* ..... 25.
Fuji 3½" Disks *(Box of 10)* ..... 25.
Memorex 3½" Disks *(Box of 10)* ..... 25.
MAXELL 3½" Disks *(Box of 10)* ..... 25.
3M 3½" Disks *(Box of 10)* ..... 25.

INFORMATION SERVICES

Compuserve
Compuserve Information Service ..... 19.
Includes subscription, manual, 5 hours of connect time, and monthly publications.
Source Telecomputing
The Source *(subscription & manual)* ... 30

MISCELLANEOUS

American Tourister
Mac Carrying Case 69
Automation Facilities
Floppiclene *(ten cleaning disks)* 25
Refill Kit *(ten disks)* 10
Clean Image Ribbon Co.
Clean Image Ribbon Kit ..... $12.
Designed to clean the print-head.
Computer Coverup
External Disk Drive Cover ..... 4.
Imagewriter Cover ..... 8.
Wide Imagewriter Cover ..... 8.
Mac & Keyboard *(two covers)* ..... 10.
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Underware Colorpens ..... 10.
Jumbo Colorpens ..... 13.
ColorPack ..... 19.
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High quality rip-stop nylon dust covers for your complete Macintosh system. Available in navy-blue, burgundy-red, or silver-gray.
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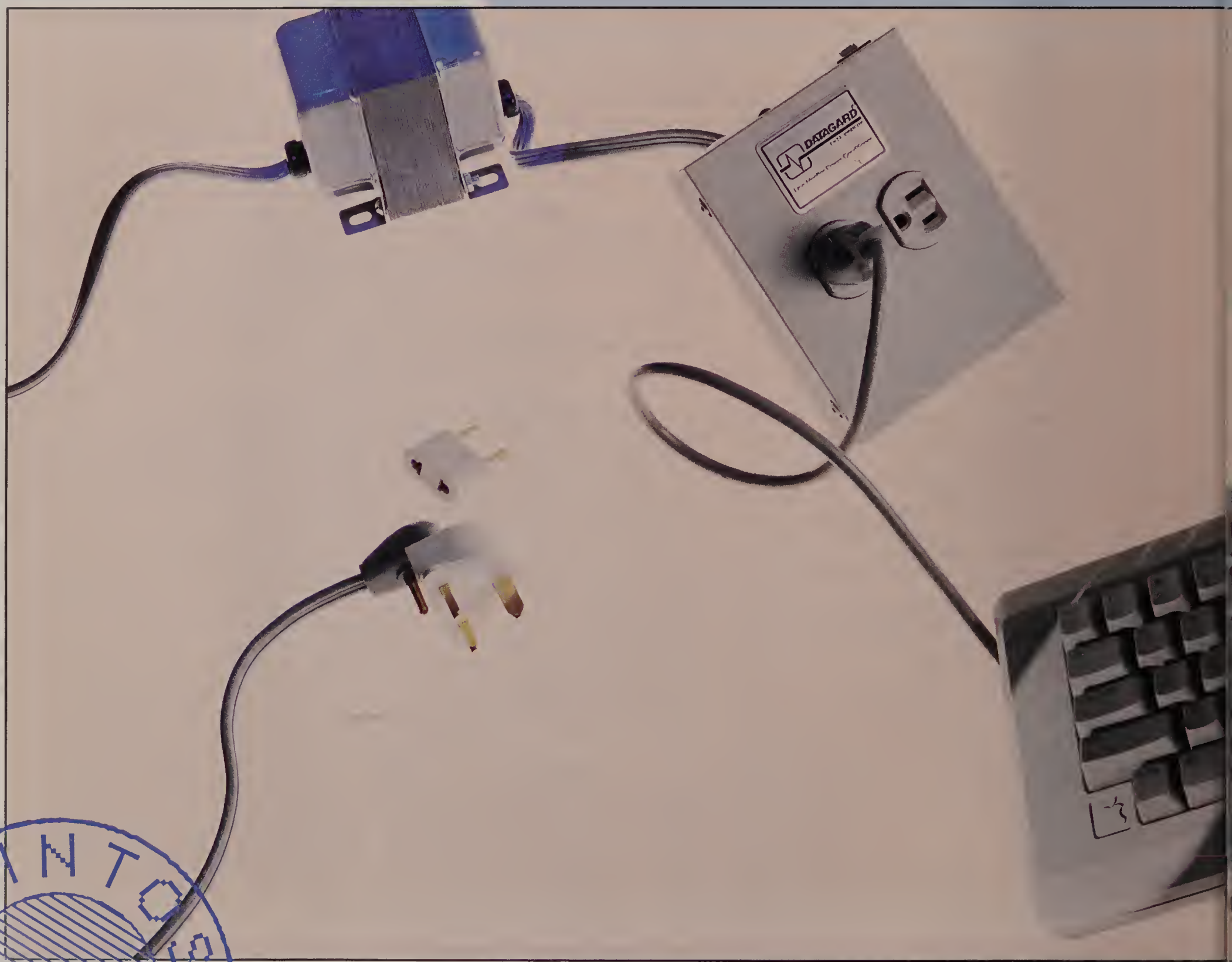
Numeric Keypad Cover ..... 7.
Imagewriter Cover ..... 11.
Wide Imagewriter Cover ..... 13.
Mac & Keyboard Cover ..... 15.
Laserwriter Cover ..... 17.
Mac XL & Keyboard Cover ..... 20.
I/O Design
Imagewriter Transfer Ribbon ..... 10.
Available in black, red, blue and yellow.
Imageware ..... 45.
Padded Imagewriter Carrying Case.
Macinware ..... 65.
Sturdy well-padded bag for the Mac.
Innovative Technologies
The Pocket Pak *(holds 6 disks)* ..... 10.
The Easel ..... 15.
Folding diskette holder. Holds 20 disks.
CompuBag ..... 59.
Well-padded carrying case for your Mac and accessories. Reinforced bottom.
Kalmar Designs
Teakwood Roll-top Case *(holds 45 disks)* 16.
Teakwood Roll-top Case *(holds 90 disks)* 25.
Microsoft Press
Microsoft Multiplan: Of Mice and Menus . 12.
Inside MacPaint ..... 14.
MacWork MacPlay ..... 14.
The Apple Macintosh Book ..... 14.
Presentation Graphics on Apple Mac . 14
Moustrak
Available in brown blue, red, gray, & green.
Moustrak Pad
Standard 7"x9" size ..... 8.
Large 9"x11" size 9
Imagewriter Pad 15
RAEX Enterprises
Mouse-Trap 8
Convenient storage space for the mouse.
Ribbons Unlimited
Available in black, blue, brown, green, purple, red, yellow, orange and silver.
Imagewriter Ribbon 5
Imagewriter Ribbons Six Pack 27
Imagewriter Rainbow Six Pack 27
Smith & Bellows
Classic disk case, made by New England craftsmen. Holds up to 90 disks. 19



To power a North American Macintosh abroad, you need (counterclockwise from the keyboard): a surge protector, a step-down transformer, and plug adapters. A little extra hardware can save you a lot of trouble.

MACINTOSH · CARNEGIE

The Macintosh Passport

Kenneth Ray Stubbs

American Airlines flight 448 from O'Hare landed smoothly and on time at Montreal's Dorval International Airport. With memories of John Steinbeck's *Travels with Charlie,* I lifted my month-old Macintosh in its Apple-logo carrying case to my shoulder for the long walk from the plane to Canadian customs.

Though the Macintosh does not resemble Steinbeck's dog, nor is a 747 like Steinbeck's van, the computer has become a close companion during my travels in North America and Europe, where I write and conduct seminars. Confidently I lowered the Mac to the customs counter, along with my Imagewriter, which was secured in a heavy-duty hard case. After a few questions and a few minutes of consulting the customs manual, the official behind the counter turned and informed me in a French accent that I would have to leave a security deposit of about $400–no personal checks or credit cards accepted.

"What?" I exclaimed.

"Yes, in case you leave Canada without your computer, we require the deposit to cover taxes and import duties. Of course, the money will be refunded about two weeks after you leave with your computer."

Suddenly, my spirits were dampened at the prospect of entering Canada.

The Carnet

After returning home, I immediately began to explore less costly ways of carrying the Macintosh abroad, because in less than a month I would be traveling to Vienna and Zurich. Eventually my research led to the United States Council for International Business. That private organization, in cooperation with similar organizations throughout the world, offers a special form called a carnet (pronounced car-nay), which allows goods to pass through customs duty-free in the close to 40 countries that accept the document.

The carnet fee varies according to the estimated value of the computer system. If the computer system is valued at less than $500, the carnet fee, which includes one year of coverage, is $60; for systems valued at more than $500 and less than $5000, the fee is $100; and for systems valued at between $5000 and $15,000, the fee is $125. In addition, the council requires a security deposit of 40 percent of the value of the computer system, in the form of a certified check, an insurance bond, or a bank letter of credit.

If the council anticipates no problems or claims, it returns the security deposit within 30 days after the carnet documents are returned to the council by the customs departments of the foreign countries you visit. However, the council has the right to retain the deposit for up to 30 months from the date the carnet is issued because that is how long the council is liable for customs violations by carnet holders. Therefore, any letter of credit or insurance bond must have a 30-month term.

You can obtain information and application forms for the carnet by phoning or writing the council at one of its four offices, which are located in New York; Schaumburg, Illinois; Los Angeles; and San Francisco. Generally, a carnet takes three to four days to process

after receipt of the appropriate form and security deposit.

When you receive the carnet information packet, you find an insurance firm's brochure, offering to provide a surety bond for 1 percent of the security deposit amount, with a minimum of $20. I took advantage of the offer; thus, for a $100 carnet and the $20 surety bond, I was able to travel with my Macintosh and Imagewriter throughout Europe and other continents for a year without depositing duties when I entered foreign countries. The insurance company's bond, however, in no way protects your equipment against accidental damage or theft.

U.S. Customs

Before leaving the country, I also contacted the U.S. Customs Service to make further inquiries about taking my computer equipment out of the country. According to the U.S. Customs official I spoke with, if you travel abroad to "free-world" countries with a computer as personal baggage, you're not required to fill out any special customs forms when you leave the States. If the computer or printer was manufactured in a foreign country, however, U.S. Customs recommends that you fill out Form 4457 (Register for Foreign-made Items for Non-Commercial Use) and have it validated by U.S. Customs before you leave the country. If you don't have Form 4457 upon returning to the United States from abroad, you may have to pay a duty on foreign-made equipment even though you owned it when you left the States.

Australia	Ivory Coast
Austria	Japan
Belgium	Luxembourg
Bulgaria	The Netherlands
Canada	New Zealand
Canary Islands	Norway
Cyprus	Poland
Czechoslovakia	Portugal
Denmark	Rumania
Finland	Singapore
France	South Africa
Germany	South Korea
Greece	Spain
Hong Kong	Sweden
Hungary	Switzerland
Iceland	Turkey
Iran	United Kingdom
Ireland	United States
Israel	Yugoslavia
Italy	

Carnet Countries

The customs departments of the countries listed here accept carnet documents. Having a carnet when you travel abroad streamlines customs procedures and gets your Macintosh in and out of participating countries duty-free.

The U.S. Customs Service also recommends that you fill out Shipper's Export Declaration Form 7525-V when you take a computer abroad. Form 7525-V is used primarily by the U.S. Department of Commerce to compile statistics about items exported from the United States, but the document can be used to verify that the computer system is personal property and was not purchased during a trip abroad. The form can be obtained at stationery and office supply stores or at the U.S. Customs offices at international airports.

If you travel abroad frequently with computer equipment owned by your company, you can apply for a GTE (General License for Temporary Export). Like Form 7525-V, the GTE verifies that the equipment is exempt from import duty taxes upon your return to the United States. To obtain a GTE, you first explain your situation to the local Department of Commerce office. An official there will tell you what information to include when you request the GTE from the Washington, D.C., office of the department. The Commerce Department issues the company a GTE license number, which can be used indefinitely for equipment you take outside the United States. The GTE takes about a month to obtain, and no fee is charged for the service.

If you travel with the Macintosh to Eastern-bloc countries such as Poland or the Soviet Union, you need a Validated Commerce License from the U.S. Department of Commerce. This special license is required for 16- and 32-bit personal computers and for more powerful computers such as minis and mainframes. Eight-bit computers like the Apple II are no longer controlled items and don't require the license. You can obtain an application form from a local Commerce Department office, but you must send the completed application to the Washington headquarters. Allow at least four months to get the license. In addition, you need the Shipper's Export Declaration Form 7525-V when you travel in Eastern-bloc countries.

Insurance and Warranties

With traveler's check commercials fueling images of my Macintosh mysteriously disappearing in an airport baggage labyrinth, I phoned my insurance agent before leaving for Vienna. My renter's insurance policy doesn't cover the Mac while I'm traveling with it. However, most renter's or homeowner's insurance can be extended for an additional premium to cover a computer system while you travel abroad.

I also found that some insurance companies offer special policies for personal computers. One company, Safeware, of Columbus, Ohio, offers a policy that covers computer equipment while you travel overseas. The rate depends on the value of the computer equipment. For overseas coverage, Safeware's minimum policy covers up to $11,000 worth of equipment, including software and hardware. The yearly premium is $200, and claims are processed on a $200 deductible

Travelers Advisory

United States Council for International Business Offices
U.S. Council for International Business
1212 Avenue of the Americas
New York, NY 10036
212/354-4480
Telex 14-8361 NYK

U.S. Council for International Business
1900 E. Golf Rd.
Schaumburg, IL 60195
312/490-9696

U.S. Council for International Business
3345 Wilshire Blvd.
Los Angeles, CA 90010
213/386-8111

U.S. Council for International Business
353 Sacramento St. #300
San Francisco, CA 94111
415/956-3356

United States Department of Commerce
U.S. Department of Commerce
Office of Export Administration
P.O. Box 273
Washington, DC 20230

Insurance
Safeware, The Insurance Agency, Inc.
2929 N. High St.
P.O. Box 02211
Columbus, OH 43202-9990
800/848-3469, 614/262-0559 in Ohio

Hard-Shell Carrying Cases
Thermodyne International
20850 S. Alameda St.
Long Beach, CA 90810
213/603-1976
List price: $285, includes space for the Macintosh, the keyboard, and the mouse

ATS Cases, Inc.
25 Washington Ave.
Natick, MA 01760
617/653-6724
List price: $235, includes space for the Macintosh, the keyboard, and the mouse; $255, includes space for the Macintosh, the keyboard, the mouse, and the external disk drive

basis. The policy doesn't cover the computer system if you travel in combat zones. It doesn't insure travel within the United States or in South Africa, Iran, Iraq, Libya, Puerto Rico, or Canada. In addition, the policy doesn't include provisions for theft from an unattended vehicle; damage from nuclear hazards, war combat, or hostile actions; confiscation by a government or local authority; damage or theft while the property is leased or rented to others; mechanical breakdown; or problems due to power surges or defects in the design. What does the policy cover? Fire, natural disasters such as floods or lightning, vandalism, theft, and accidental damages. Safeware pays claims based on replacement costs, and no depreciation is deducted. For coverage in the United States, you need a separate policy. Other companies I checked offer annual insurance on computer hardware and software worth $5000 for about $70.

I am one of those people who, on the 90th day of warranty, witnessed an Apple II+ screen turn to scrambled eggs and the power supply board fail. That experience made me an extended warranty addict. Consequently, I spoke to my Apple dealer to see if the warranty on my Macintosh is valid outside the United States. Unfortunately the Apple warranty is good only in the country where you purchased the computer.

Transforming Your Macintosh

The electrical power in most countries outside the United States runs at approximately 220 volts. Macintoshes designed for use in the United States run only at 110 volts. An Apple technician explained that I would need to buy a step-down transformer that converts the current from 220 to 110 volts. Since I planned to use both the Mac and an Imagewriter, the technician recommended a transformer that can handle 250 or more watts, or volt amperes. About 100 watts ought to safely run the Mac by itself (see "Foreign Power" in this issue's *Get Info*). I purchased an appropriate transformer for about $60 at an electrical supply store. I also spent under $10 for a set of plug adapters for non-North American wall sockets. Still feeling cautious, I

added a surge protector with a replaceable fuse and an "on" light to verify that electricity is indeed flowing. A surge protector can prevent fluctuations in the electrical current from damaging the machine. The "on" indicator for the surge protector turned out to be useful while I was in Europe. The plug adapters seemed never to fit securely into the wall sockets, so as a precaution against bad connections, I wouldn't plug in the Mac until the surge protector's light consistently stayed on.

Getting on Board

Once you begin traversing the airways with your computer equipment, you'll find out that airplanes and airlines are not all the same when it comes to bringing the Macintosh on board. With some muscle and determination, the Mac is definitely transportable, but portable it isn't. Technically, the Macintosh's width exceeds most airlines' restrictions for carryon luggage. However, I managed to keep the Mac at my side in coach class on every domestic and international flight I took.

I chose Apple's carrying case because it was the narrowest available at the time. In some planes you can fit the Macintosh in the overhead compartment. Sometimes a friendly flight attendant will store the Mac in one of the special compartments usually reserved for hanging garment bags.

If you ship a Macintosh as baggage, you may want to look into purchasing a hard-shell carrying case. These sturdy, foam-lined cases are specially designed for national and international shipping of fragile equipment. Although the cases cost around $200 to $300, you don't have to worry about baggage handlers treating the computer like an ordinary suitcase. If you check the computer through, be prepared to pay perhaps $80 each way on flights to and from Europe.

Following an Apple technician's suggestion, at the security check I allow the Macintosh to go through the X-ray machine but have disks inspected by hand. In any case, be sure to arrive at the airport early so that you have enough time to accommodate unexpected delays.

Should you decide to take the Macintosh along as your traveling companion abroad, you can avoid problems by obtaining a carnet, some insurance, and the proper adapters and electrical converters. Then you can confidently set up your Macintosh office in the Swiss Alps, the Virgin Islands, or wherever you can find an electrical outlet and a place to sit. □

■■■■■■■■■■■ *Kenneth Ray Stubbs is a free-lance writer based in Berkeley, California.*

+

= AI

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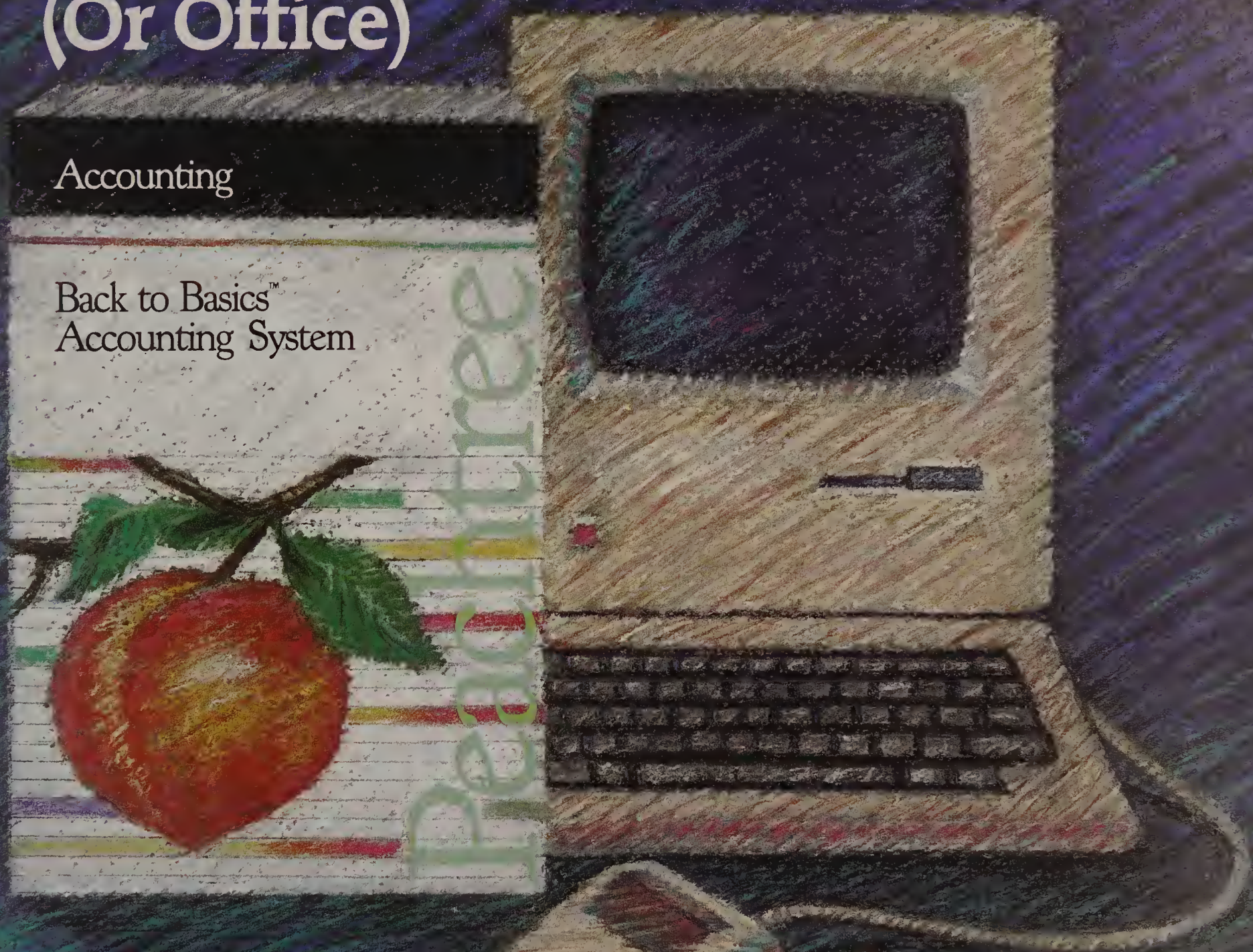

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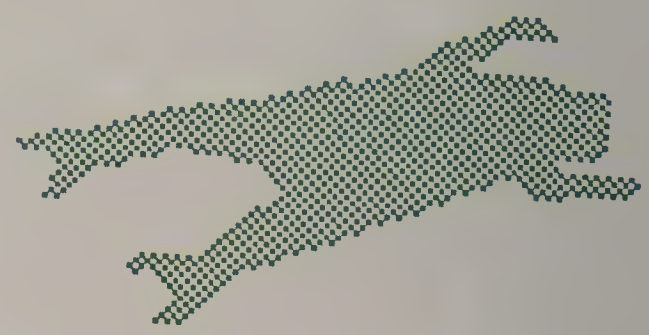
A Moving Pixel Show



Keith McCandless

In 1928 a now-familiar animated mouse made his film debut in Walt Disney's "Steamboat Willie." The year 1985 marks another milestone in animation history: the advent of VideoWorks, *a program that lets you create your own animated "movies" on the Macintosh screen. "Steamboat Willie," created by Disney and an unsung artist named Ub Iwerks, was the first animated cartoon with synchronized sound.* VideoWorks, *created by a small company called MacroMind (see "The Software Rock 'n' Roll Band" in this issue) and published by Hayden Software, also features synchronized sound, as well as an animation studio stocked with everything from a cutting room to a cast of characters.*

VideoWorks is animation fun with serious potential. Imagine the possibilities: educational animations showing the movements of the planets or the workings of an internal combustion engine, business flowcharts that flow and bar charts that grow, animated storyboards to sketch scenes for films or commercials, and of course, plain old entertainment. But before you're ready to amuse your friends with original cartoons or create animated presentation graphics at work, you'll have to sit down and spend some time–and experience some frustration–learning to use the program. This frustration is common to all challenging software: you grasp the potential before you have the credentials. With *VideoWorks* you soon learn that your wildest dreams require hundreds of frames, numerous special effects, and a considerable investment of time. Despite the program's quick cutting and pasting, many steps are required to produce only a few seconds of even halfway elaborate animation. But it's worth the effort.

The Disks

The *VideoWorks* package includes three disks: Movies, a disk containing 18 sample animations; an Art disk with *MacPaint* images to paste as is into animations or to modify for your creations; and the System disk, which you use to create animations. The System disk also contains three tutorials, which, in conjunction with *VideoWorks'* excellent documentation, guide you through the intricacies of the program.

The manual directs you first to the Movies disk for a sight-and-sound demonstration of skillfully rendered animations to whet your appetite. King Kong clutches a damsel and swats at buzzing biplanes from atop the Empire State Building. A group of scuba divers swims by, accompanied by authentic-sounding bubbles. A couple dances as a band called the Wetlegs plays in the background. The Movies disk also provides three animated charts that show various statistics relating to the cheese industry. Certainly *VideoWorks* has the potential to spice up business presentations, but for the most part the sample movies play up the irresistably frivolous aspects of Macintosh animation.

Before you move on to the System disk, you may also want to take a look at the drawings on the Art disk, which are reproduced in the manual. You'll find backgrounds, a chart kit, and a cast of characters ranging from a falling cowboy to a jumping mushroom (see Figure 1).

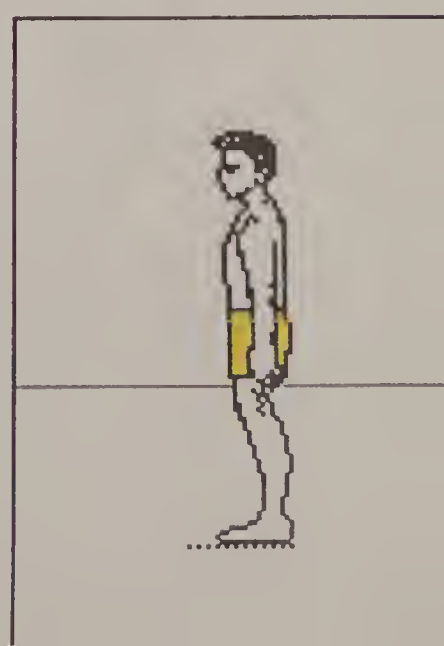
Manual Labor

After you've seen *VideoWorks* do its stuff, you'll want to get started on your own animations. While the program may at first seem intimidating, with its seven windows and ten menus, the documentation walks you step by step through simple animation sequences, introducing *VideoWorks* terminology and animation techniques. Once you've completed the elementary exercises, you'll be ready to go on to the more sophisticated animation examples in the tutorials. When you've mastered the tutorials, you'll have enough animation experience under your belt to produce professional-looking animations on your own.

The Greatest of Easels

One of *VideoWorks'* windows will seem familiar to Macintosh users. CheapPaint is the program's scaled-down version of *MacPaint* (see Figure 2). The CheapPaint window offers a pencil, a paintbrush, an eraser, several shape- and line-drawing tools, and more. Like *MacPaint,* CheapPaint offers a text-entry mode with a selection of fonts, including Apple's pictorial Cairo font. With the tools, you create images in an easel that you can expand or shrink as necessary. A selection rectangle allows you to move images within the easel, and FatBits lets you close in on every pixel.

A sample VideoWorks *animation is based on Eadweard Muybridge's time-lapse still photos of figures in motion taken in the 1880s. To start the gymnast's action, hold the magazine open with your right hand midway down the edge of the pages and let the 19 pages fan out rapidly from under your right thumb.*



The CheapPaint window, unlike the *MacPaint* window, can be scrolled and resized. With a little experience, you'll discover that many familiar *MacPaint* shortcuts, such as double-clicking on the pencil to enter FatBits, are faithfully employed by CheapPaint, which is really not so cheap after all.

Creating a Cast

The images you draw in CheapPaint are called castmembers. Much like an elementary school play, every object in an animation sequence is a castmember, even if it's a bush or the moon. In fact, by its own terminology, *VideoWorks* animation takes place on a stage, which consists of the entire Mac screen. In addition to drawing castmembers with CheapPaint, you can paste in *MacPaint* images, including pictures provided on the Art disk, artwork from commercial clip-art disks, digitized images, or your own *MacPaint* drawings. *VideoWorks* includes a desk accessory called Art Grabber, which lets you view *MacPaint* documents, select portions of them, and transfer selected images to the Clipboard to paste into an application, all without opening *MacPaint*. Pasting images into *VideoWorks* via Art Grabber can save you a tremendous amount of time. Because you can use Art Grabber with programs other than *VideoWorks,* Hayden also sells the desk accessory separately.

When you draw a castmember in CheapPaint or transfer one from a *MacPaint* document, the castmember automatically appears in the Cast window (see Figure 3). You can have up to 64 castmembers on a 128K Mac and an amazing 256 castmembers on a 512K machine. You use the mouse to select a castmember and drag it onto the stage. Once a castmember is on the stage, it is surrounded by a dotted square. You can drag the corners of the square to stretch or shrink the castmember.

Assembling a cast can be a labor-intensive task, but you can enlist the aid of *MacPaint* features such as shrinking, stretching, rotating, or flipping an object. T/Maker's ClickArt Effects, a *MacPaint* desk accessory that lets you slant, distort, or rotate drawings by degrees, can also come in handy.

Animation Techniques

VideoWorks offers two methods of animation: real time and frame by frame. Real-time animation is simple: you place the pointer on a castmember, hold down the mouse button, and move the castmember around the stage. When you release the mouse button, *VideoWorks* plays back the movement you recorded. This is the quickest and easiest kind of animation.

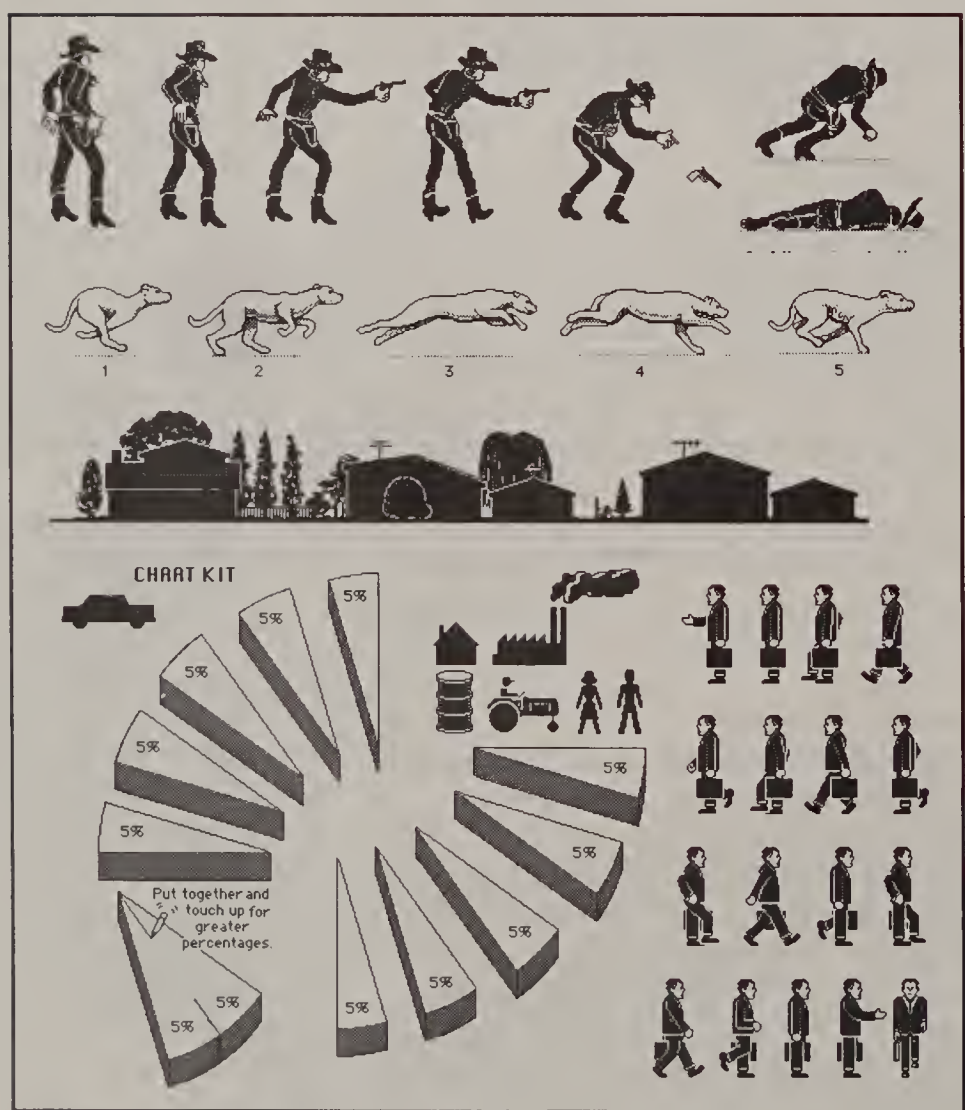


Figure 1
The Art disk includes hundreds of drawings: backgrounds, body parts, sequences of people and animals in motion, and a kit to help you produce animated charts. You can modify the images in MacPaint *and paste them into your own animations.*

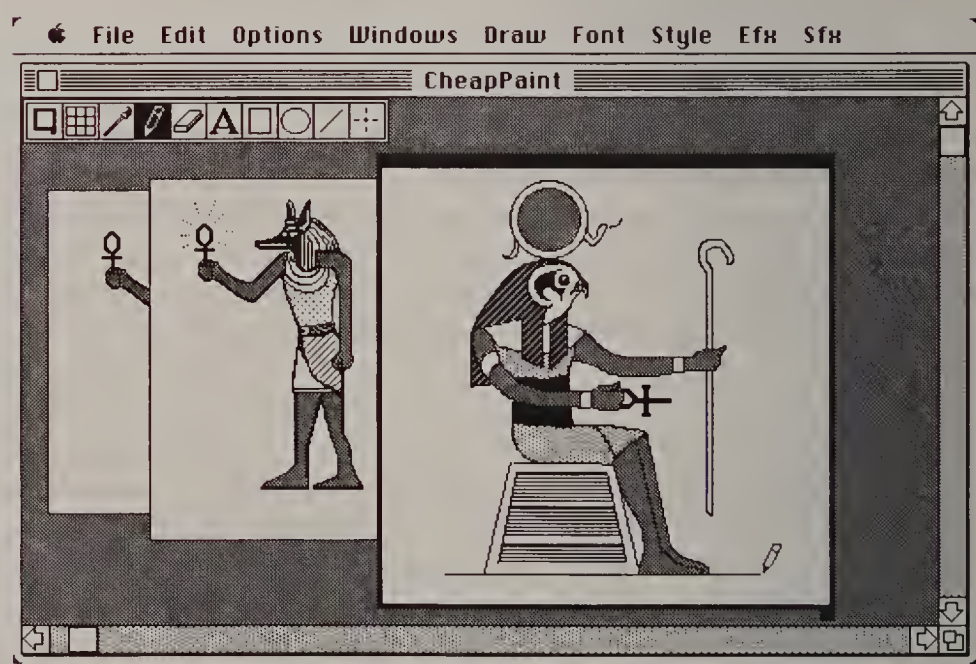


Figure 2
CheapPaint provides a stack of easels on which to draw the cartoon cast. CheapPaint offers many of MacPaint*'s tools, including FatBits, a selection rectangle, and paintbrushes of different shapes and sizes.*

Frame-by-frame animation is more complicated and more time-consuming, but it gives you a greater degree of control over the movement of your castmembers. To create the illusion of movement frame by frame, you string several castmembers together to make an animated object known as a *sprite*. For example, the hopping frog in the program's first tutorial, "Pharaoh's Plague," is a sprite made up of five separate frog castmembers, each in a different phase of a leap. Each sprite—whether a leading actor or simply a piece of scenery—occupies one of 24 channels, which means you can put as many as 24 sprites into an animation. In the Pharaoh's Plague sequence, the hopping frog is repeated in several channels, creating an army of frogs.

To add a frame to an animation, you press ⌘-A. If you wish, you can control movement with pixel-by-pixel precision by using the program's Tweak window. The window allows you to indicate the direction and number of pixels a castmember will move from one frame to the next.

Knowing the Score

As soon as you drag a castmember from the Cast window onto the stage, it is assigned a channel in the Score window (see Figure 4). The 24 channels are labeled A through X down the left side of the Score window, while frame numbers are displayed across the top. A small symbol in each frame indicates the movement—up, down, left, right, diagonal, or static—of the castmember that occupies that frame.

The 24 channels are arranged to reflect foreground priority. The first sprite entered occupies channel A. When a second sprite is placed in channel B, it passes in front of the sprite in channel A when you play back the animation. Although *VideoWorks* allows you to cut and paste sections of the score to edit animations, your job is simpler if you plan a movie in advance and draw background sprites first.

Sound Effects

The topmost channel in the Score window sports a loudspeaker icon. In this channel you place the sound track of a movie, selecting from among over 80 sounds in the Sfx (sound effects) menu. Once you select a sound, you add it to the animation by dragging the pointer across the appropriate frames in the Score window's sound channel. The sounds include instruments, snatches of tunes, and an array of thuds, beeps, laser blasts, explosions, and other noises that are guaranteed to add life to animations. You can also construct tunes by pasting individual notes into the sound channel, but this method is fairly tedious. When you add sound to your animations, keep in mind that the sound effects vary in length. An explosion, for example, requires more frames to play in its entirety than does a thud. Many of the sound effects are less than convincing—the bird songs and the helicopter, for example. I found the space sounds the best of the lot.

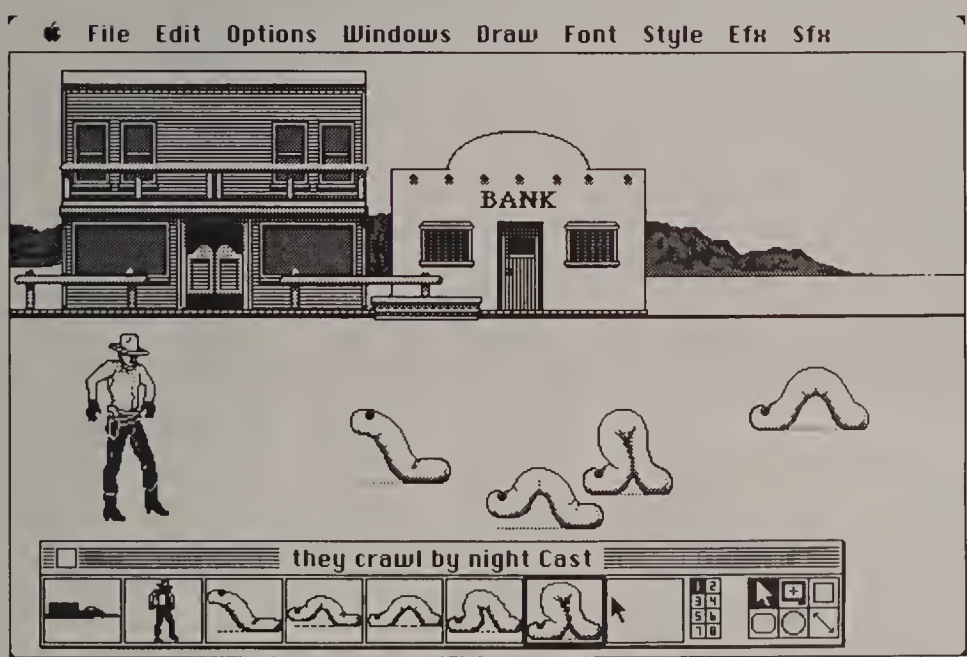


Figure 3
The Cast window holds rows of castmembers that can be dragged onto the stage and arranged into an animated sequence. The shapes on the right side of the window are QuickDraw primitives, which you can use to place shapes directly onto the stage.

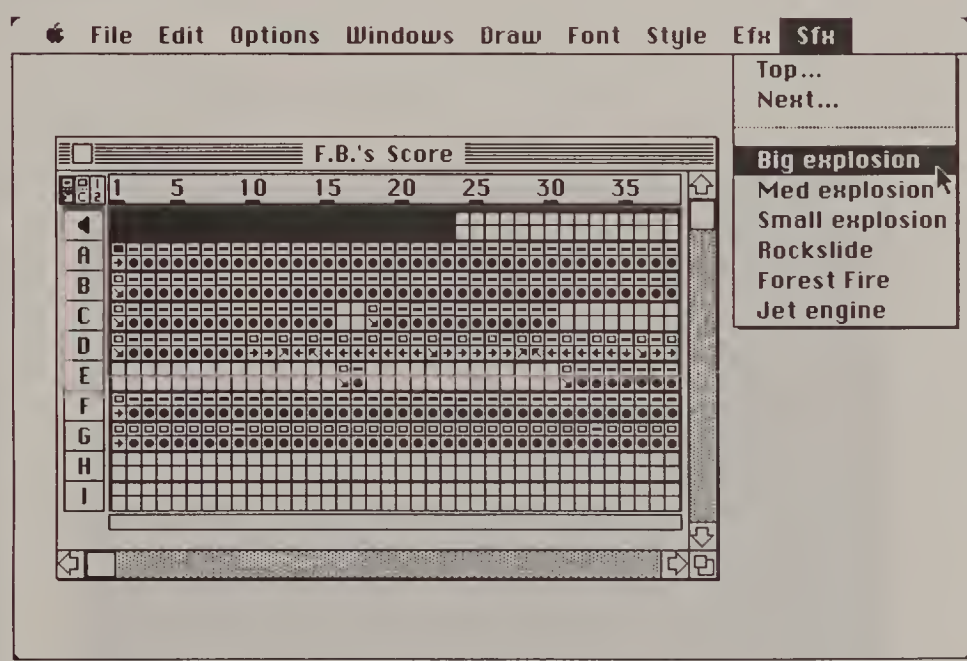
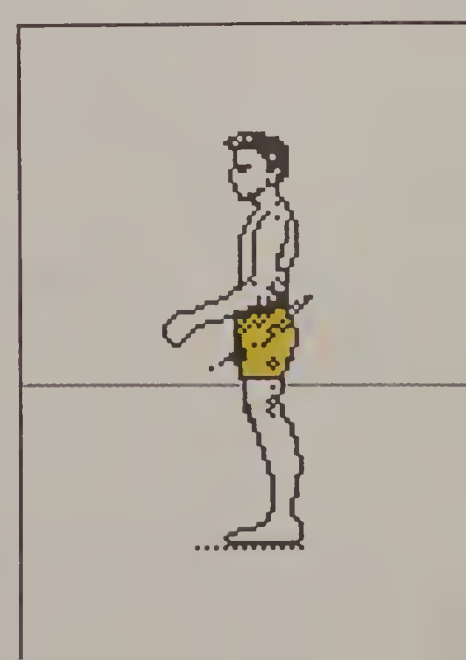
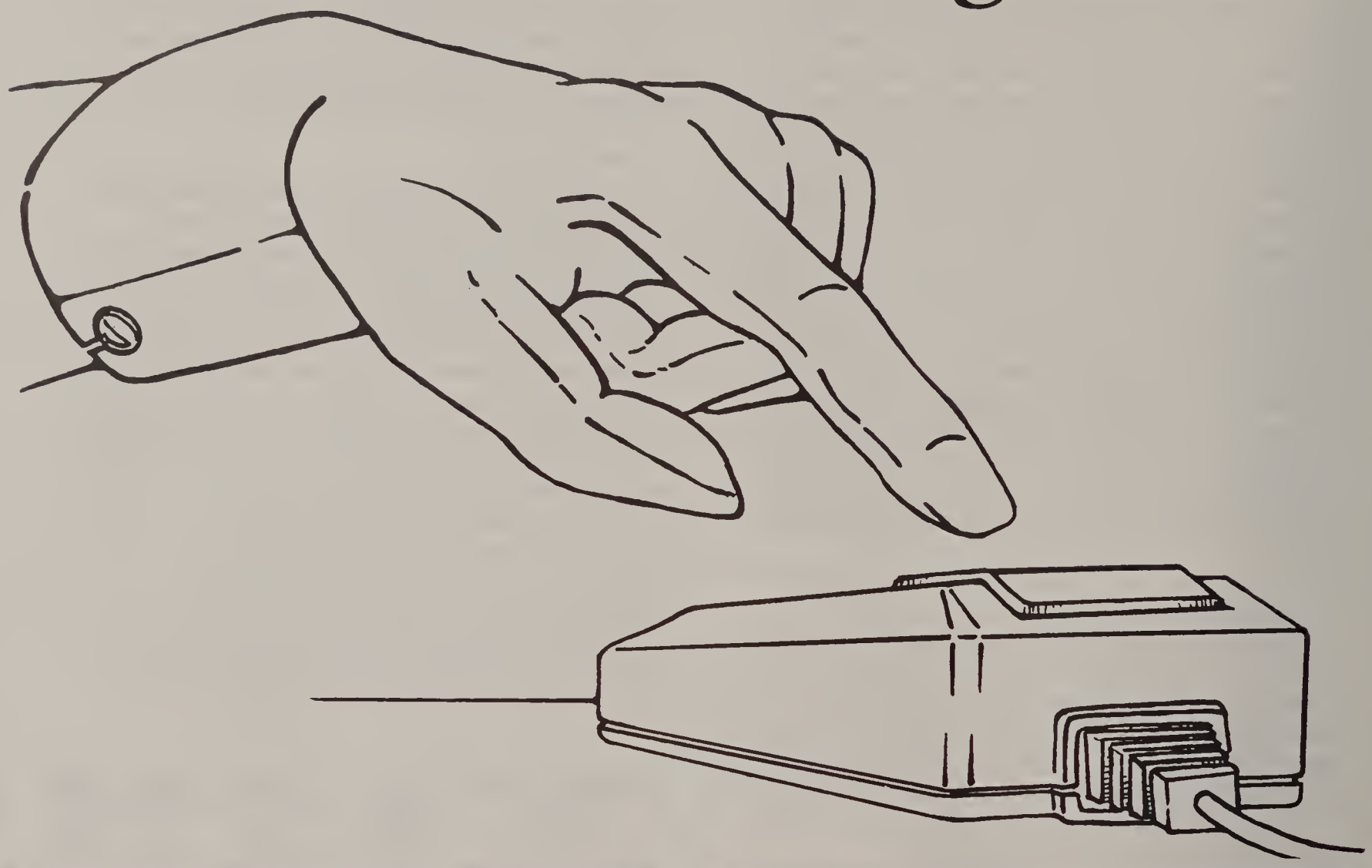
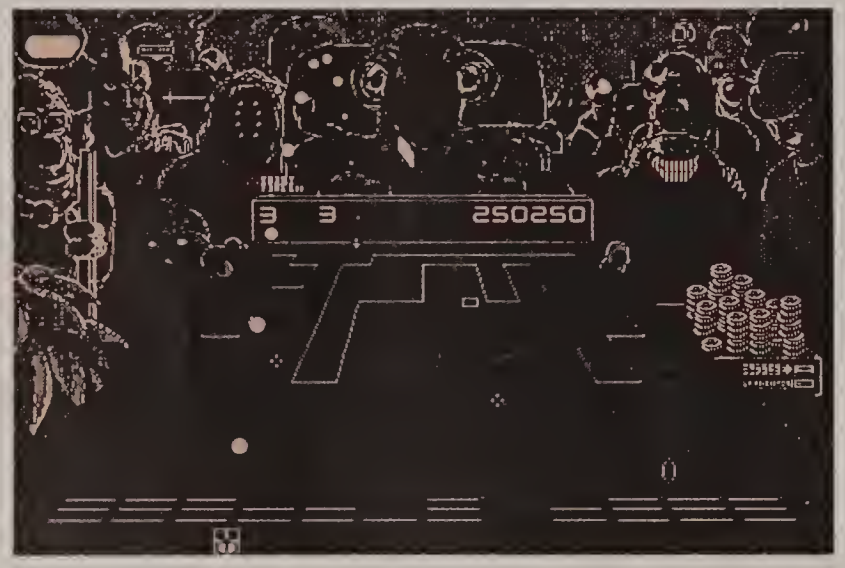


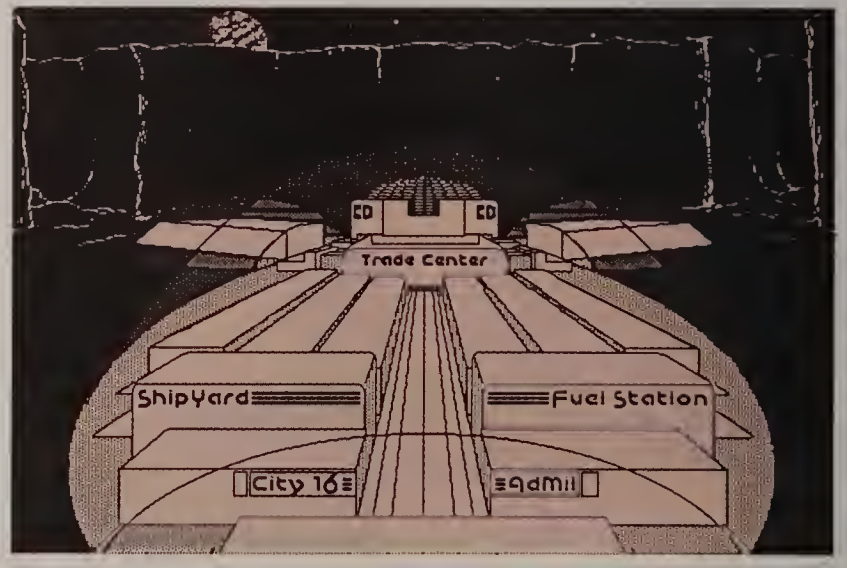
Figure 4
The Score window reflects in its 24 channels the movement of castmembers. You use the Score to edit movies, selecting groups of frames to cut, copy, paste, or clear. You add sound effects in the topmost channel of the window.



Let the Games Begin...







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VideoWorks also features "synergistic" sound, in which the position of a sprite on the screen affects the pitch and volume of a sound. If you employ this option, a sound's pitch increases as a sprite moves toward the top of the screen, and the volume increases as the sprite moves toward the right.

Directing the Cast

Nestled under the menu bar when you open *VideoWorks,* the Control Panel window allows you to play back an animation sequence as you work on it (see Figure 5). You can click through an animation one frame at a time, move the movie forward or backward, stop the action, or vary the playback speed. The panel also lets you loop the playback to endlessly repeat a sequence. The grid on the right-hand side of the Control Panel tells you which of the score's 24 channels is currently active.

Special Effects

VideoWorks offers an Efx (effects) menu with more special effects than most people will ever use. The Efx menu option you will probably use most often is Matte, which allows you to remove the rectangle of white space surrounding an object, making the background visible behind the object. Other effects let you invert black and white, make objects transparent, or leave a trail of images behind an object as it moves. A good demonstration of all the Efx menu variations is included on the System disk.

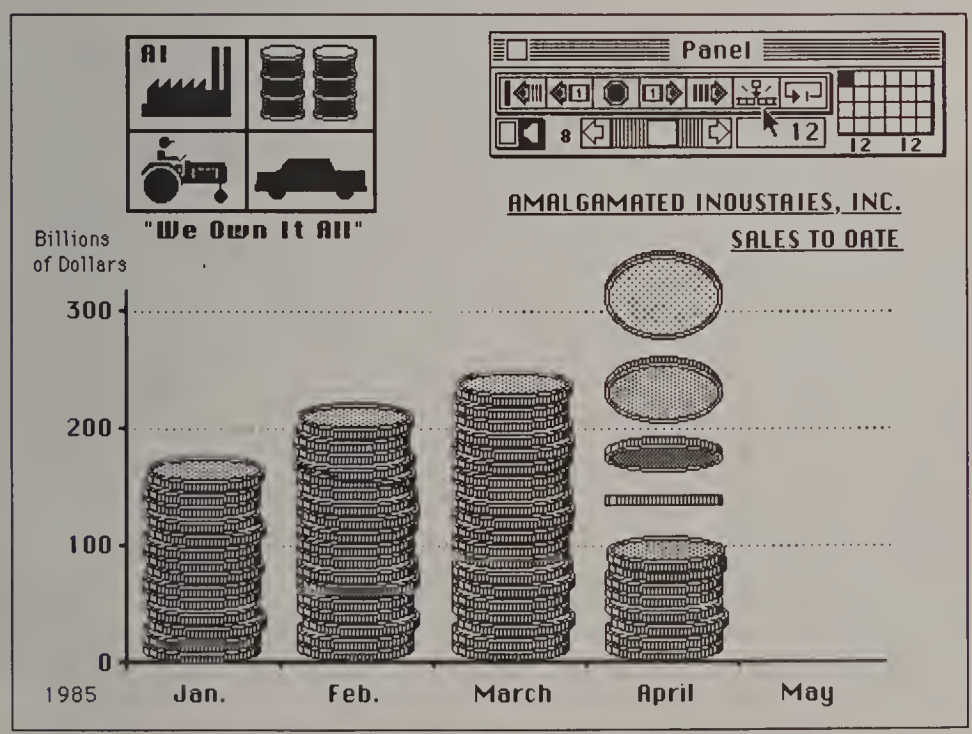

Figure 5

The Control Panel lets you view the movie frame by frame, either forward or in reverse. When you click the panel's Add icon, a frame is inserted into the animation at a selected location, and existing frames are pushed to the right.

Parting Shots

Although you can use *VideoWorks* with a single-drive 128K Macintosh, doing so entails a good deal of disk swapping. Even a simple 30-second animation can take up 50K of disk space. I lost count after 30 swaps while trying to load a 1-minute animation on a 128K Mac. While veteran disk swappers with arms like hermit crabs can no doubt load animations successfully, I think a 512K Mac and an external drive are essential for ambitious animators.

VideoWorks is a rich and complex program. The documentation and the tutorials guide you through the basics, and it is then up to you to decide how much time and effort you want to spend experimenting with the program's many features. *VideoWorks* has domesticated a sophisticated technology that was once available only to professional animators. Like the Mac itself, the program opens greater horizons than it can yet accommodate. I believe anyone with a Macintosh will be fascinated with *VideoWorks,* as much for what it heralds as for what it is. □

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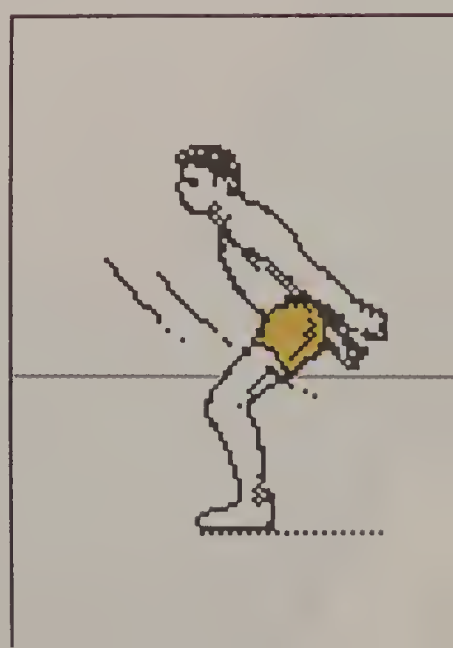
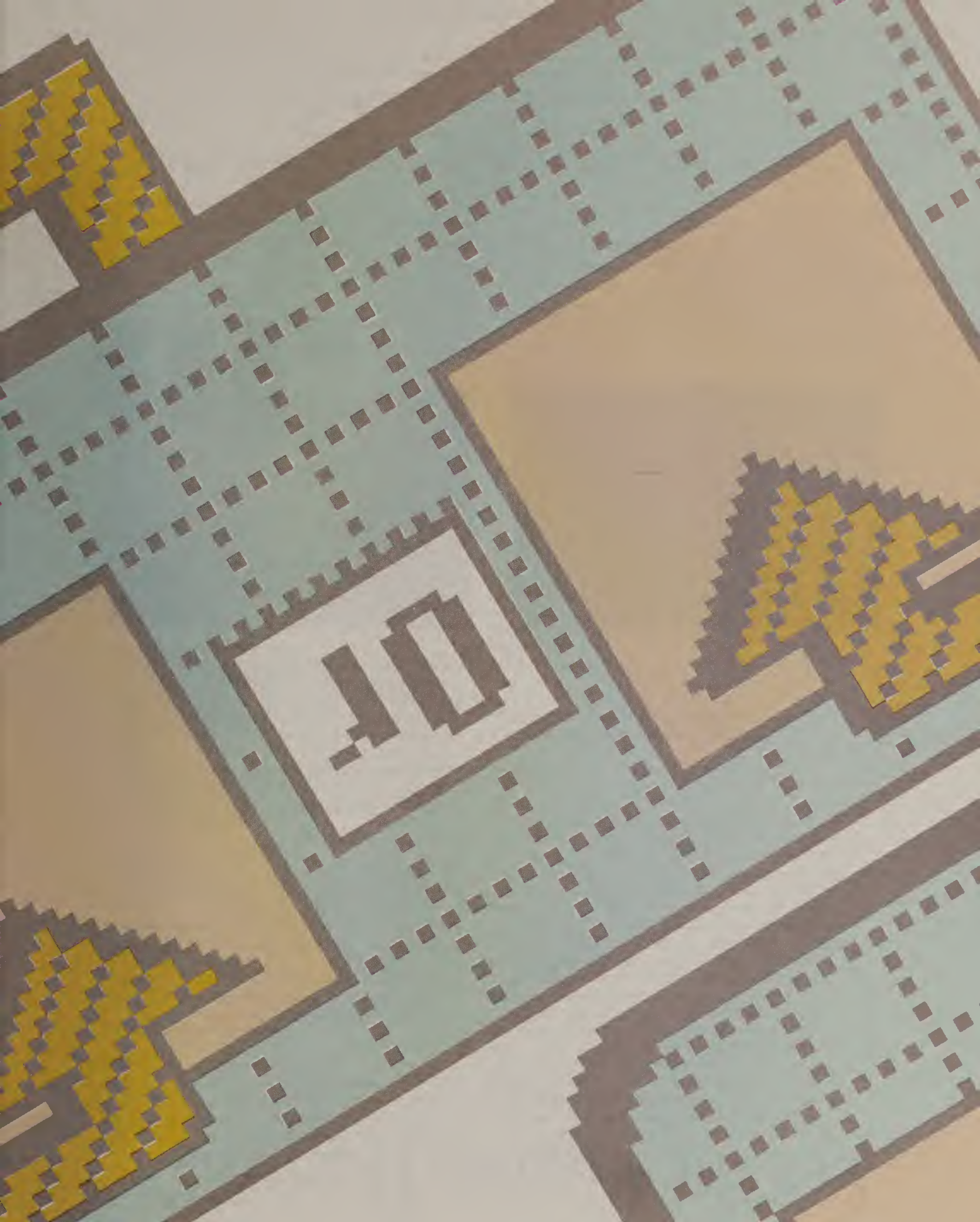
VideoWorks
Hayden Software
600 Suffolk St.
Lowell, MA 01854
800/343-1218
List price: $99.95





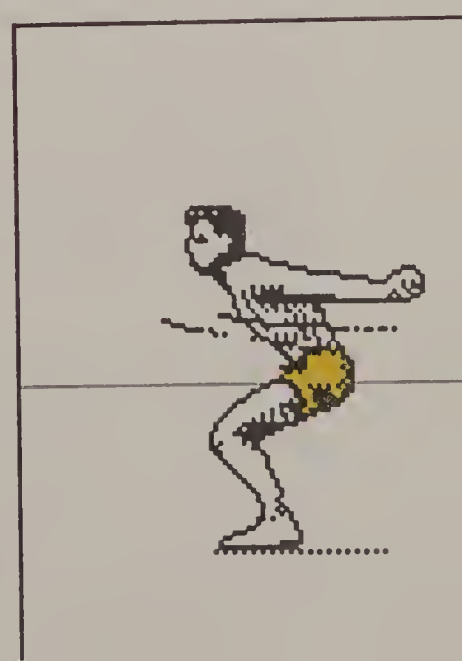
Files of Icons and Tiles

David L. Foster

The ads announcing Odesta's Helix *reach back to the very dawn of the Macintosh, proclaiming as far back as January 1984 that the database manager was "a new stage in the evolution of information/knowledge systems." The same ads also claimed that* Helix *was as easy to use as it was difficult to describe. Nearly two years after the introduction of the Mac, I was anxious to see if* Helix *was as innovative an approach to database management as was promised.*

Helix is a database management program for the 512K Macintosh, best suited for people who design and manage large and complex databases. The program's outstanding quality is the flexibility with which you can access data and generate forms and lists. *Helix*'s flexibility can help you quickly design or adapt a database for ambitious data management chores.

If flexibility is *Helix*'s strong suit, the way the program presents itself visually is its most striking characteristic. In fact, *Helix* makes use of many features of the Macintosh in both the program's design and its user interface. *Helix*'s design goes a step beyond incorporating Macintosh software's pull-down menus and windows by including a constellation of icons that manage nearly every aspect of a *Helix* database (see Figure 1). Although *Helix* is capable of managing complex databases, the icon-based design makes the program simple to use. Operating *Helix* seldom requires more than pointing, clicking, and dragging the mouse, a fact that can be surprising to anyone accustomed to databases designed for other personal computers.



A House of Windows

Helix not only employs numerous icons but handles large groups of windows as well. For all practical purposes, you can view an unlimited number of windows on screen at once. Thus you can see a search specification and the records meeting it at the same time. Forms specified by several data files can be displayed side by side. Furthermore, the forms and listings generated by *Helix* are not static. They are updated as you make changes or additions to the database in other windows.

The separation of a database into a large number of windows demonstrates the best and worst characteristics of *Helix*. Although the liberal use of windows provides flexibility unprecedented in a database management program, the number of windows also creates confusion because *Helix* lacks the reassuring continuity of a single on-screen format. Operating a database through a combination of windows may make you feel as though you have no home base from which to operate. Consequently, *Helix* is initially difficult to get accustomed to. However, *Helix* is substantially more powerful than other programs, and once you become familiar with the program's design, it is easy to master.

Collecting Relations

As a whole, a *Helix* database is represented by a Collection icon. Within each collection you store Relation icons, which are smaller, more manageable subsets of information. *Helix* is a relational database, which means that fields of data and calculations in a relation can be based on fields in other relations, as long as all participant relations are members of the same collection. Relational databases minimize the keyboard entry required to use and maintain a database.

Relational data files allow you to divide a complex application into several relations of more manageable sizes and still be able to access or update data in more than one relation at a time. For example, data on an item's price and a customer's address could be retrieved from other files so that an order form might require you to enter only a part number and a customer's name. *Helix* completes the form with key fields and a calculation that looks up the necessary information in separate files containing your inventory and your customer mailing list.

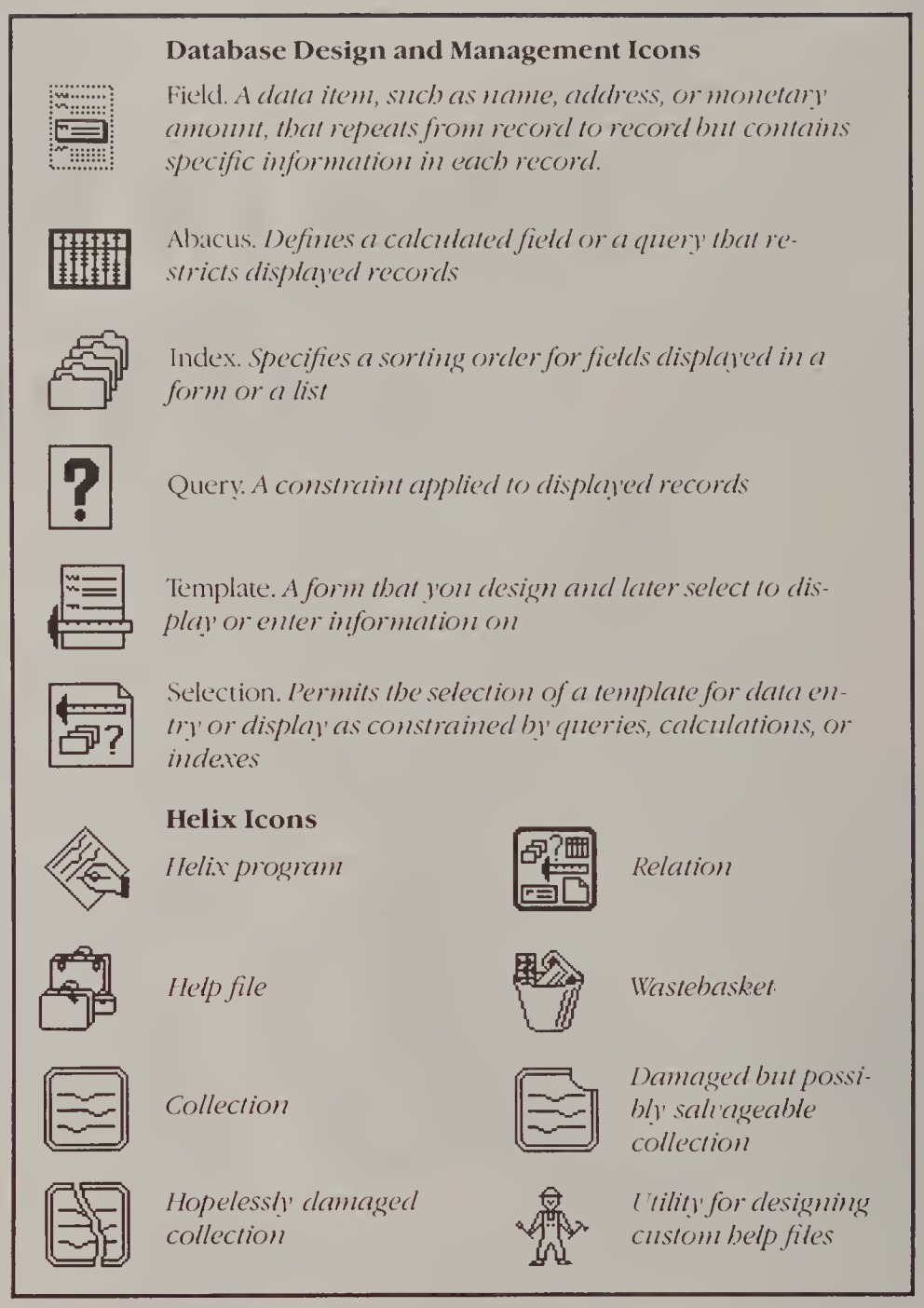


Figure 1
Helix *has a large cast of icons that not only represent files on the Macintosh desktop but also play a role in nearly every aspect of managing a database. The upper half of the table shows the six icons employed to design and operate a* Helix *database, and the lower half shows icons for handling data and help files.*

Designing a Database

You design a database chiefly in the Relation window (see Figure 2). You drag the icons representing fields and other database specifications one by one from a palette into the window area to the right of the palette, in the same way you create tabs in *MacWrite*. Once an icon is in the window, you open it by double-clicking, which allows you to further format that component of the database.

For the most part, you use six icons to design and manipulate a database. The icons represent components and specifications of a *Helix* database, including fields, forms, indexes, and search criteria. The Selection icon lets you choose among specifications so you can tailor a database to a particular task.

The Relation window is the closest *Helix* comes to a home base. Unfortunately, as the Relation window becomes increasingly cluttered, the icons become difficult to organize. With complicated databases, finding a single icon becomes bewildering. Unfortunately, *Helix* doesn't organize icons with folders or by changing views.

Each field, such as a name, an age, or a telephone number, is represented in *Helix*'s main window with a Field icon. Fields can contain data of five basic types: text, numbers, dates, pictures, or flags. Picture fields can include bit-mapped images created with *MacPaint* or video digitizers, adding dimension to a database. For example, you can create eye-catching forms or a personnel database that includes employee pictures.

Unless you choose otherwise, fields are automatically formatted for text. The amount of text is limited only by available disk space. You determine the amount of information displayed in a field when you design a form template for viewing records. You can format the appearance of number, date, or flag fields, but you still have the freedom to enter information in a different format. Unlike with most database programs, you have the flexibility to change a field's display format after you enter data; however, you can't change the field's type.

The Well-Tiled Abacus

If you've ever designed a database, you know it is often useful to compute the contents of a field from the values of other fields. For example, you could build a database with information on relatives in which ages are calculated from birth dates. In most databases a calculated field of this type is defined by a formula such as (TODAY'S DATE – BIRTH DATE)/365.25. In *Helix*, however, calculated fields are defined graphically with icons called calculation tiles with which you build flow-sheet-style calculations (see Figure 3). Tiles provide a range of mathematical operations, tests, and functions that you can drag from the icon listing and build piece by piece into the calculation desired.

Helix has over 80 calculation tiles. No other Macintosh database offers as many calculations with as much diversity as *Helix* does. Many calculation tiles are designed to let you manipulate and reformat text easily. The math capability provided by the tiles is also extensive. For example, *Helix* includes calculation tiles for trigonometric and logarithmic functions that are useful to scientists and engineers.

To create a calculation you first open an Abacus icon in the Relation window. You then define the calculation by dragging tiles corresponding to various functions or operations from a palette into the Abacus window.

You can build on work you've already completed by including previously created Field and Abacus icons in other calculations. You insert icons representing previously defined fields and calculations into the blanks of the calculation tiles in a new Abacus icon.

The results of calculations are routed with arrows that you pull with the mouse from tiles into the blank slots on other tiles. Circular calculations, in which the value of a field is dependent on its own value, are prohibited.

Overall, I think calculation tiles provide a superior method of programming a database compared to the complicated languages used by other powerful database managers. Complex calculations can be designed in very little time. Unlike the confusing formulas required by other database programs, calculation tiles make it easy to understand the relationships between the parts of a calculation. The greatest difficulty with *Helix*'s approach is trying to visualize a complex calculation in its entirety; the Macintosh's small screen is limiting in this respect. However, *Helix* has two features that provide some relief from the problem. When you drag tiles off the edge of the screen, *Helix* automatically scrolls

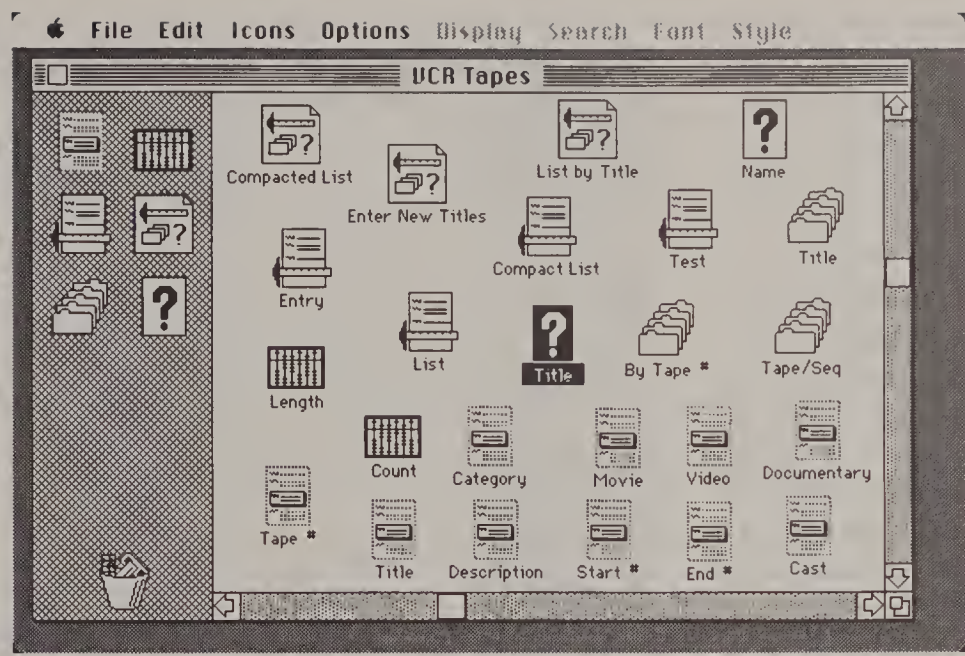


Figure 2
You create the key components and specifications of a database in a Relation window. Each Field, Abacus, Index, Template, Query, and Selection icon named in the window was created by dragging icons from one of the icon wells located in the palette on the left side of the window.

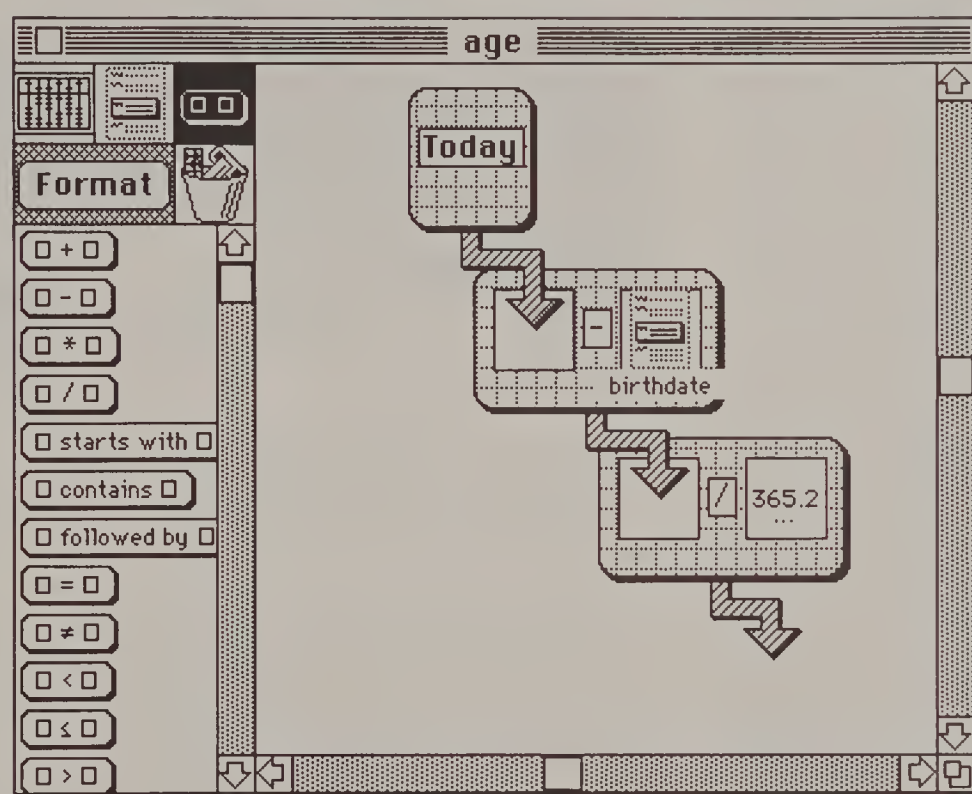


Figure 3
You design a calculation by dragging tiles into the work area of the Abacus window. By clicking one of the icon switches located above the Format button, you can change the list to show previously created fields and calculations that can be included in the blanks of calculation tiles. You route the results of tiles to other tiles by stretching arrows with the mouse.

the screen in that direction. You can also view an entire calculation at once by printing it. *Helix* can scale a calculation to fit on a single page, or you can enlarge the calculation to full size, letting it span several pages if necessary.

When you finish defining a calculation, you close the window. If you have left any arrows unconnected or blanks unfilled, a dialog box appears reminding you that *Helix* cannot use the calculation until it is completely defined. This feature ensures that you enter complete information in a database. You can solve the problem immediately or close the window and return to fix it later.

Establishing an Order

Once you establish the Field and Abacus icons necessary to hold your data, it's a good time to decide how you want to organize that data. *Helix* lets you maintain an index on any data fields. The index can determine a view order or maximize search efficiency. Indexes for fields can be built following data entry, but that method is slower than indexing before data entry and can require minutes to index one or two fields in a large database. You use the Index icon to construct an index for any of the Field or Abacus icons you created earlier. Indexing a field is a good idea if you want to look up data from another relation. When you enter data into an indexed field, *Helix* updates the index, enabling the program to efficiently find records containing that field. By allowing you to save a number of indexes and choose from them to suit the task at hand, *Helix* provides power and flexibility.

Dual-Purpose Forms

You use Template icons to design the forms on which you enter and display information. The number and variety of templates you can design are unlimited, and nearly any template can be used to view or print data stored in any collection. The ability to reuse data in many different forms is a key component of the program's flexibility and makes *Helix* the best database management program I know for producing reports. You create rectangular blanks in which to enter and display information or labels by selecting one of several rectangle-drawing tools from the palette and then using typical Macintosh click and drag procedures (see Figure 4). *Helix*'s facility for drawing forms, while adequate, is not as good as *FileMaker*'s or *Microsoft File*'s. You can choose both the font and the style of data displayed in individual rectangles and of any text labels you add to identify fields.

When you use a template to build a form, the identity and the format of information displayed within a rectangle are determined by the icon the rectangle contains. You choose fields or calculations from a list for placement in the blank rectangles in the same way that you create calculations by dragging icons into the blanks in calculation tiles.

The Icon's Icon

You can't enter data directly into a template but must first choose a template from within a Selection icon. If you think of the other icons of *Helix* as paints and brushes, Selection icons are the grand canvas on which the big picture is painted. A large number of forms for data entry and data display can be designed and stored in the main Relation window as Selection icons.

When you open a Selection icon, a window appears that allows you to specify a form using a previously constructed template (see Figure 5). Within the window the names of all templates, queries, and indexes created within that relation are listed in three panels that you can scroll if necessary. You choose a form and any records that you want to access by selecting the corresponding names with the mouse. Selecting the Show Form command displays all data within the constraints of the template you choose. If you select an Index icon, the program displays the data in the order maintained by the index.

Figure 4
You use the Template icon to design forms used to enter or display data. To create a form, select a rectangle-drawing tool from the palette, click and drag to place and size each rectangle, and drag Field and Abacus icons into the blank rectangles.

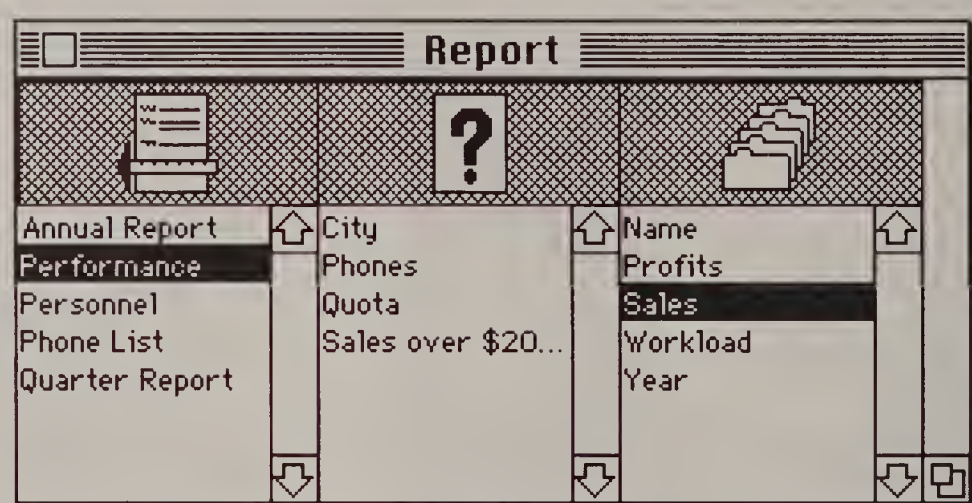


Figure 5
A Selection icon lists templates, queries, and indexes that you've already created. Before you enter or display data, you must choose the template you want from within a Selection icon.

Sharing Information

In addition to entering data directly into *Helix* by choosing an entry form from the Selection icon, you can incorporate data previously created with other programs. For example, you can import data from a program such as *Microsoft Multiplan*. You can also export a data file already in *Helix* to any database program that accepts data delimited by tabs and carriage returns, such as *Microsoft File* or ProVUE's *OverVUE*.

Query by Icon

Helix provides two methods for finding information once you've entered it. Query icons are a quick means of instructing *Helix* which records you want to see on screen or in print. You can also devise a highly specific search by creating a flow sheet with the Abacus icon. The speed with which *Helix* retrieves search data is only average compared with other database programs. However, the calculation tiles provide the power to locate detailed information, making *Helix* well suited to complex applications.

When you open a new Query icon, a window appears that contains a palette with a list of templates. Selecting a template fills the window with a representation of the form specified by that template. Clicking on a data item's rectangle reveals a dialog box in which you specify how you want the contents of that field compared to the value entered in the top part of the box. You can enter more than one field specification when you create a Query icon. Choosing a Query icon from a Selection window causes *Helix* to display only those records that meet the Query icon's specifications.

You can also search a database by building complex flow sheets in the same manner that you define calculated fields. As long as the calculation defined within an Abacus window results in a flag-type, or true/false, answer, you can use it to specify a query when a form is specified in a Selection window. The wide variety of conditional operations provided by calculation tiles permits you to design powerful searches that meet complex criteria.

Printing Power

When it comes time for you to share information with other people, you get double duty out of *Helix*'s Template icon. A template icon can also serve as a report design in which you present information from a database. Lists are easily prepared in *Helix* by designing a column-and-row template and encircling all the data rectangles within the template window with a repeating rectangle, much like selecting a group of objects in *MacPaint*. When *Helix* displays a form specified by a template containing such a rectangle, it performs a "Find all" operation at the same time. The result is a list of all the records meeting the criteria specified when the form was designed. Any record in a list can be viewed by simply scrolling through the form window. It is important to remember that the lists are "live," and changes made to the data file are immediately reflected in all lists.

Helix probably has the most powerful and complete printing capabilities of any program available for the Macintosh. Selecting the Set Custom Paper command from the Edit menu brings up a dialog box with over a dozen options for printing on many sizes of paper or even printing on a Federal Express Air Bill. Forms are printed on either the Imagewriter or the LaserWriter. Furthermore, *Helix* prints text in whatever font, type size, and style you desire.

The Compleat Database Manager

One aspect of *Helix* that impressed me was the completeness and thoughtfulness apparent in the program's features. *Helix* comes with first-rate documentation. Help is always available from the Apple menu, and you can create help files for databases you design.

To ensure the accuracy of data going into *Helix*, the program continuously monitors a calculation or a form template for mistakes while you design it. When you make a mistake, the program beeps, and when you select the Why? command from the Apple menu, the program provides an explanation of the problem. *Helix* helps prevent loss of data due to power failure or system error by automatically saving your most recent additions or alterations to a database when you take a break. In addition to saving file updates during work in progress, *Helix* also provides a convenient means of backing up data files.

Since *Helix* is distinguished from most other major Macintosh applications by its lack of copy protection, you can easily copy the program onto a hard disk. A hard disk is essential for any serious use of *Helix* because the program takes up nearly 300K, requiring the System Folder to reside on a second floppy disk and leaving little room for data.

Helix is a powerhouse database management program with capabilities beyond those of most database programs. If you want to get involved with analyzing and designing tailor-made database applications, *Helix* is the best tool I know to start with. The program lets you quickly and effectively design entry forms, display lists, and create reports. Because *Helix* is so flexible, you can quickly adapt a database to meet new challenges without losing weeks of work.

Helix makes full use of the icon-based interface of the Macintosh. Some people may have an aversion to the program's unusual design. Although *Helix*'s icons, windows, and tiles can be confusing at first, the program is easy to learn. After spending time with *Helix*, you may find yourself warming up to the program's design.

Nevertheless, *Helix* is not for everyone. If your needs are simple, several other database programs for the Macintosh are easier to learn and provide better performance. However, if your needs are at all beyond the ordinary, I thoroughly recommend *Helix*. □

David L. Foster is a biochemist in the Biology and Medicine Division of Lawrence Berkeley Laboratory, University of California, Berkeley.

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The Form Letter Reformation

Nicholas Lavroff

Business Essentials brings ease of use to the form letter with a combination form-letter generator and database

The written word's evolution from cave paintings to computer screens was no doubt fraught with dissent at every point. When the transition was made from cave paintings to runes on slate, for example, dissenters probably complained that the stones, although more portable, were a lot easier to misplace. With the subsequent transition to paper, stone cutters must have deplored the new medium's lack of permanence. And when the written word went from handwritten to typewritten, much was probably said about the degeneration of the epistle as an art form.

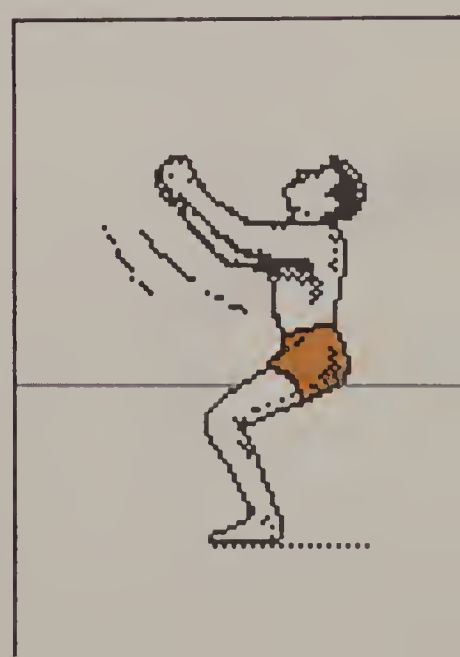
One computerized innovation that has been adopted reluctantly is the form letter, perhaps because it is seen as a futile attempt to personalize an essentially impersonal communication. The form letter's obvious mass production makes it an uninspiring communication, especially if, as is often the case, the "personal" parts of the letter are misspelled or printed in another typeface. Nevertheless, more and more people now realize that they can use form letters for personal as well as business correspondence. With today's printer technology, such letters can be indistinguishable from ones that have been individually typed. After all, wouldn't you prefer original rather than photocopied replies to your personals ad?

Assimilation's *Business Essentials* is a combination database and form letter generator that can make life easier for people who prepare repetitive mailings, whether business or personal. The program consists of two separate but interactive modules, AutoWriter and DataMerge. AutoWriter lets you create model letters to store in a permanent file, while DataMerge is a mailing list program that lets you merge information from a directory of names and addresses with the letters you prepare in AutoWriter. In addition, the DataMerge program can print mailing labels and envelopes as well as telephone and address lists.

AutoWriter Letters

If you were to identify the parts of a typical business letter, you would find the addressee's name and address, his or her title, the salutation, the letter's contents, the signature block, and so on. These elements are arranged in a particular style or format. For example, if you prefer a full block letter, all lines begin at the left margin, whereas in a personal letter the date and your address are generally placed against the right-hand margin, and the closing and signature centered. Structurally speaking, writing a letter involves inserting data for each element in a given format.

Business Essentials uses this approach to break down a letter into its basic elements. The Items menu provides the elements of a business letter, such as today's date, name, salutation, and closing. The



Format menu offers several templates such as block, full block, and memo.

To help you visualize a letter as you compose it, AutoWriter designates for each item a *primary alternative,* a default word or phrase such as *Yours truly* for the closing, and positions the item on the page in the chosen format. You customize the item by typing over the primary alternative. The next time you select the closing item, for example, the program shows whatever you typed instead of *Yours truly.* If you want to choose from among *Sincerely, Yours truly,* or *Forever gratefully yours,* the program allows you to add alternatives and place them on the Items menu (see Figure 1). AutoWriter also allows you to create formats and add them to the Formats menu (see Figure 2).

AutoWriter provides a quick way to customize the standard elements of a letter through the Summary of Items choice on the Letter menu. Once you enter the information that refers to you, such as your first name, last name, street address, city, and state, you will never need to type it again in the letters you write—it will be there whenever you select a format from the Format menu. This depository of information can save considerable time and effort because composing a letter becomes as simple as multiple choice. New items that you create under the Items menu, however, are not reflected in the summary.

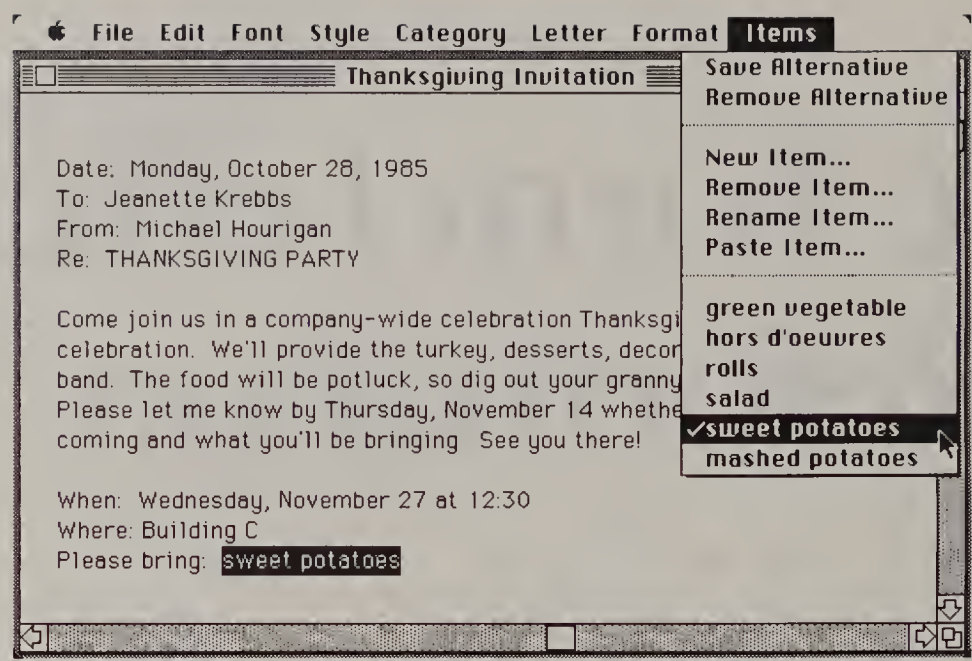


Figure 1
The AutoWriter module lets you add alternatives to its Items menu. To customize a letter, you select and paste the alternative into the contents of your letter.

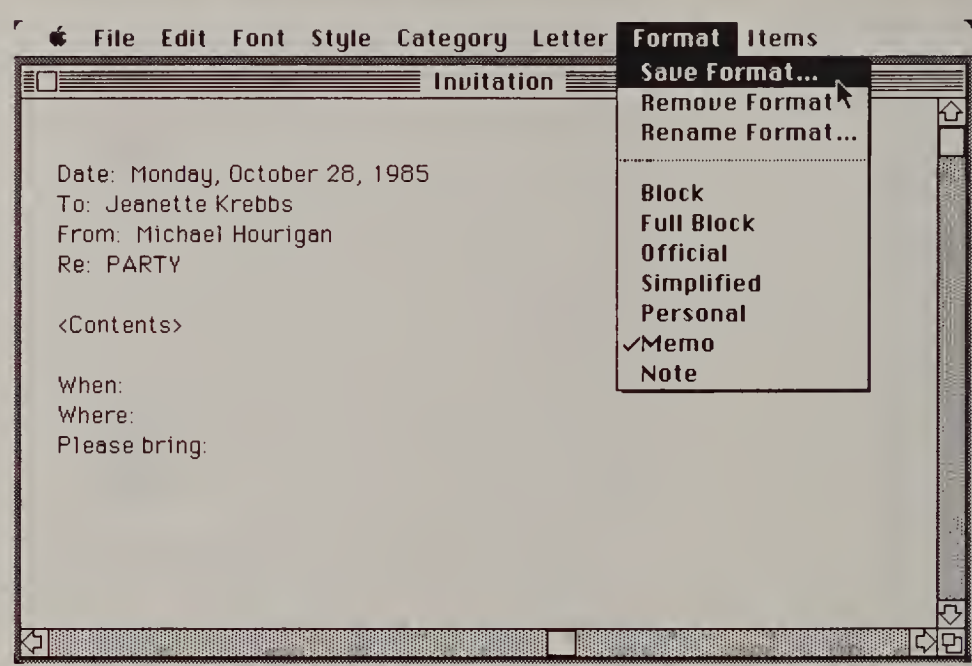


Figure 2
The standard letter formats that come with Business Essentials *can be customized for your needs and saved as a separate file, which is on the Formats menu.*

I'm Gonna Sit Right Down . . .

Whether you are writing a letter to a few relatives or sending out company invitations to a Thanksgiving party, you begin with AutoWriter. You first select or name a category for the letter. Just as on the desktop you use folders to organize your work, in *Business Essentials* you use categories and model letters to organize the form letters. For example, the invitations to a Thanksgiving party would be stored in the letter database called Party Invitations, under the category Thanksgiving and the model letter Thanksgiving Invitations.

You can compose the letter in AutoWriter or paste in text created with other word processors, such as *MacWrite,* although you lose the text's format in the process. You cannot copy graphics from *MacPaint* into AutoWriter. The module includes a text editor with full cut, copy, and paste functions, as well as a choice of fonts and styles. AutoWriter, however, does not allow you to mix fonts and styles in the same document—a limitation that may or may not be unreasonable, depending on your requirements.

You save the model letter either as part of the letter database or as a separate file. The choice depends on whether you plan to send the letter to one recipient at a time or to many. If you are planning to merge the letter with the DataMerge directory to create a bulk mailing, you save the letter as a separate file. On the other hand, if the letter goes to one person at a time, then you save it as part of the letter database. You might choose this method if, for example, you want to send updates on the Thanksgiving party to the public relations director located at another office.

When you save letters in the letter database, you can save the current version in place of the previous one or in addition

to the model letter. A list of the letters you saved in the letter database appears in the Letters menu. This direct access is particularly convenient because form letters always seem to require revisions. Although the process of learning to set up a letter database seemed confusing and laborious to me at first, I soon found myself inventing ways to set up memos and routine letters to take advantage of the program's format and item capabilities.

DataMerge Mailing Lists

To help you keep track of mailing lists, *Business Essentials'* DataMerge module is a database manager that interacts with AutoWriter to produce customized bulk mailings. DataMerge lets you create up to 16 directories or mailing lists, each capable of storing information on up to 600 individuals. Unfortunately, to get to the DataMerge module you have to exit AutoWriter and return to the desktop, a tiresome procedure. Closing one directory and opening another also requires quitting and returning to the desktop.

DataMerge is set up like a spreadsheet: each row represents an individual record, and each column is a field, or an item of information. Each record can have up to 16 fields, including 11 predefined fields for information such as first name, last name, title, position, and street address, as well as 5 fields that you define according to your specific needs. You rename these columns, labeled Misc 1 through Misc 5, so they interact with items you add to AutoWriter's Summary of Items. For example, you might want to have each employee's department listed in the DataMerge directory you use to send out the Thanksgiving invitations. You can store that information in the directory by renaming one of the miscellaneous columns Department. Then by creating an item called Department in AutoWriter's Summary of Items, you automatically include department designations in the company-wide mailing.

People accustomed to the form letter programs that accompany word processing programs such as *Microsoft Word* may find the options in DataMerge and AutoWriter confusing at first. Unlike most merge programs, *Business Essentials* offers two ways to generate form letters. AutoWriter lets you create form letters through its Items menu without having to start a corresponding data file. DataMerge lets you use the traditional merge approach for bulk mailings. In addition, DataMerge improves upon that approach by not requiring the items in the letters and the field names in the database to be in the same sequence. On the negative side, DataMerge has its own limitations. For example, the maximum number of characters that fits in DataMerge's miscellaneous columns is preset to 8 or 12 characters.

DataMerge offsets the limitation with features that enhance the directory's usefulness as a mailing list management program. For example, you can selectively hide or display any of the 16 columns so you don't have to enter or print information that is irrelevant to an application. Thus, if you were using *Business Essentials* for Thanksgiving invitations, you would not need the fields labeled Company or Street Address, but you would need the fields for Department and Building. You hide the Company and Street Address columns by selecting each of them and choosing Hide Column on the Columns menu. And because hidden information is not printed, you can avoid having telephone numbers on mailing labels. On the other hand, if you want to print a list of telephone numbers, you hide everything but the First Name, Last Name, and Phone columns.

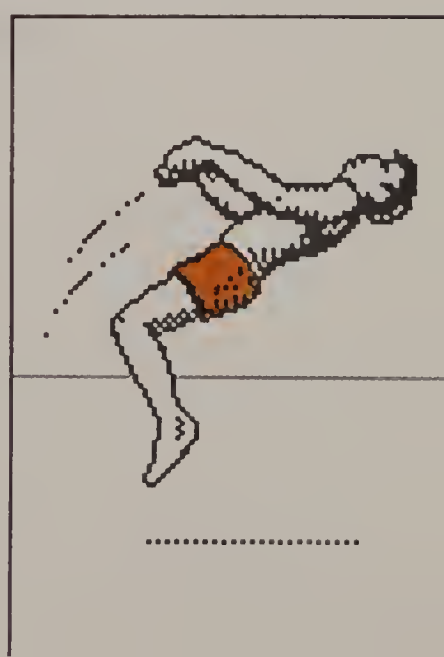
DataMerge also lets you sort the information in the directory alphabetically or numerically, in ascending or descending order. If you are preparing a bulk mailing, for example, you may want to print the letters in ascending zip code order, thereby avoiding having to sort the letters while you are waiting in line at the post office. Or before printing the Thanksgiving invitations, you could sort the company directory by department to simplify the job of distributing them.

Finally, DataMerge lets you move directory columns around with Move Left and Move Right commands. This feature turns *Business Essentials* into a quick reference database because it allows you to group and view the fields to suit your needs. For example, when you begin receiving the R.S.V.P.'s for the Thanksgiving party, you can rename one of the miscellaneous columns Food and another Drink. As you update the directory, you can rearrange the columns to see if you have too many sweet potato dishes or too much fruit punch. When you are satisfied with the directory arrangement and the lunch menu, you can save it by selecting Save Arrangement on the Columns menu. The resulting dialog box asks you whether to save the arrangement as a phone or address list or as Other, which you can rename.

Business Essentials' DataMerge module is a database manager that lets you create up to 16 directories or mailing lists

Getting It on Paper

To print personalized letters with DataMerge, you select records from the directory to merge with the model letter, using the Mark Names command on the Mark menu, and then select Print Letters on the File menu. If you need mailing labels, first select the names of the addressees by using Mark Names and then select Print Labels on the File menu (see Figure 3). You can then specify the information you want to have on the labels, such as name, department, and building, by clicking the corresponding boxes.



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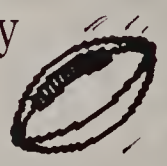

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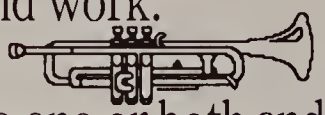

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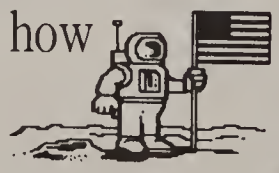

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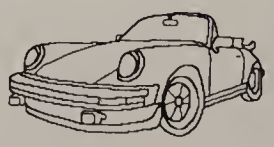

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You also specify the size of the label, the spacing and position of the text within the label, and the number of labels to be printed across the page. While overall I liked the easy procedure for printing labels and envelopes, I wished I could select the order in which text contained in the miscellaneous columns of my directory was printed on the label.

To print labels or envelopes–or phone and address lists–you display the desired columns of information from the directory and mark the rows or records to be printed. *Business Essentials* adjusts spacing between the lines to handle the problem of printing 3-, 4-, and 5-line addresses on labels. The program also lets you reprint selected labels without having to reprint the whole directory, a timesaving feature appreciated by anyone who has tackled a bulk mailing under deadline.

You can print the entire directory or print more selectively by hiding the columns you wish to omit. If the width of the columns to be printed exceeds the width of the paper, the directory will be printed on two pages. A dialog box lets you select which columns on the first page should also appear on the second page (see Figure 4). This feature ensures that the second page of the directory isn't completely useless without the first.

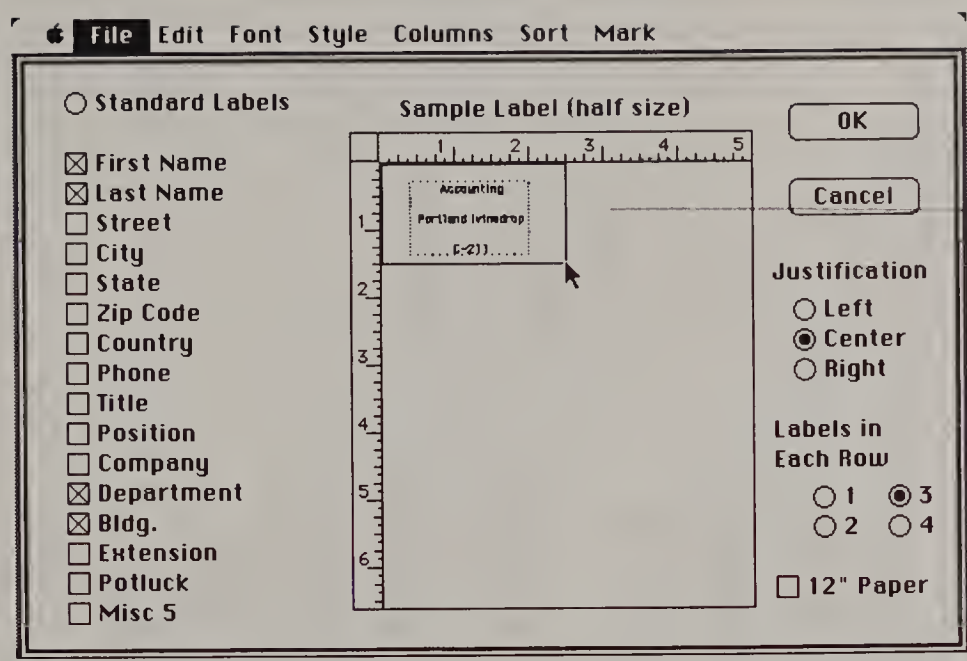

Figure 3
The DataMerge module allows you to select the information you want to print on labels as well as lists. You can set the dimensions of the label and arrange the sequence of the information on the label.

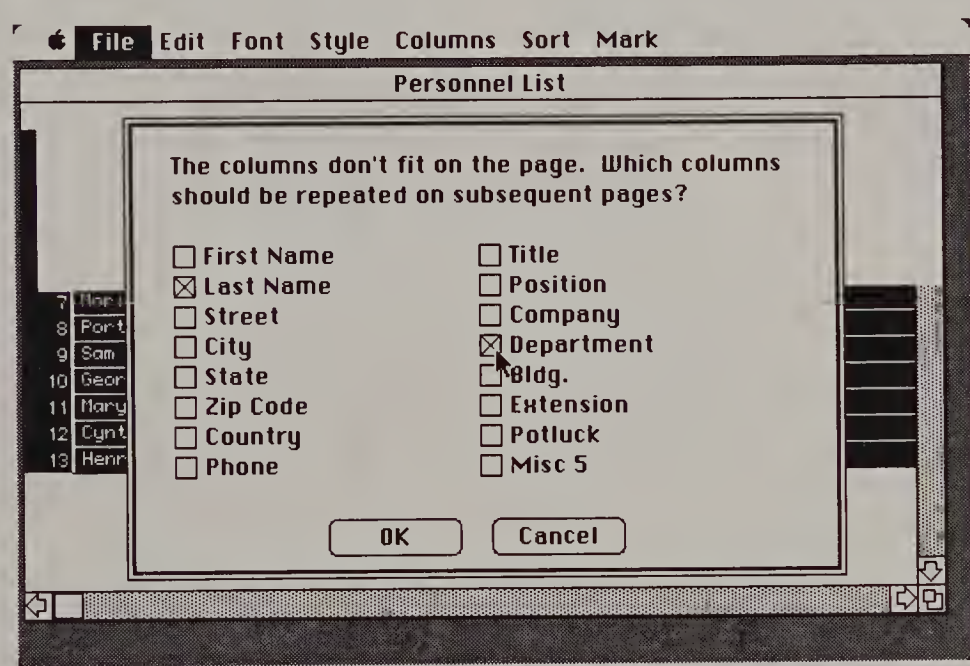

Figure 4
If the directory columns you select for printing can't fit on one page, DataMerge lets you choose which columns you want repeated on additional pages. The option ensures that each page is useful even by itself.

Other Goodies

To round off its usefulness as a business tool, *Business Essentials* includes model letters and forms to use as a basis for your own, such as marketing, credit, and collection letters. The program also includes a collection of forms that you can print and use, such as a monthly calendar, an appointment book, and plain graph paper.

Business Essentials is a unique tool that can ease the burden associated with repetitive letter writing, whether business or personal. It is at once more flexible and more limited than traditional form letter programs. AutoWriter provides custom design for a letter or a series of letters but limits the use of fonts and styles. DataMerge offers control over printing labels and directories but restricts the amount of information that can be contained in a column. I found that once I learned how to use it, *Business Essentials* let me prepare form letters quickly and easily. The beginner's work, however, is made unnecessarily complicated by the documentation. Although the manual provides step-by-step instructions for creating a customized letter database and your own mailing and phone lists, it doesn't clearly explain the overall process of creating and printing a merge letter, thereby complicating what should be a simple procedure. Nevertheless, a little perseverance will reward you with a practical tool. Assimilation's program might even improve the reputation of the form letter as a vehicle for the written word. □

Nicholas Lavroff is a Contributing Editor of Macworld.

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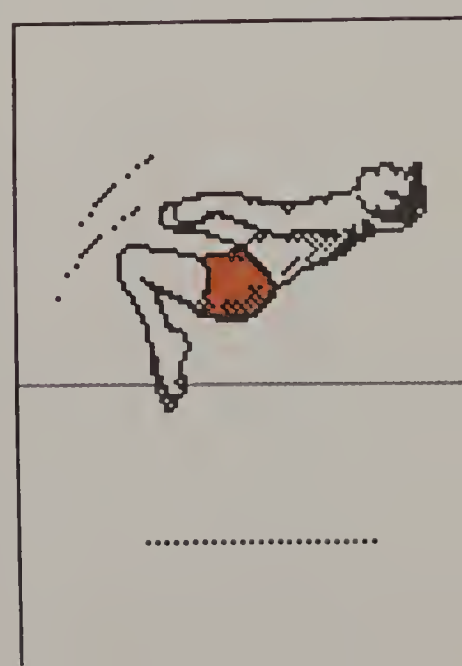


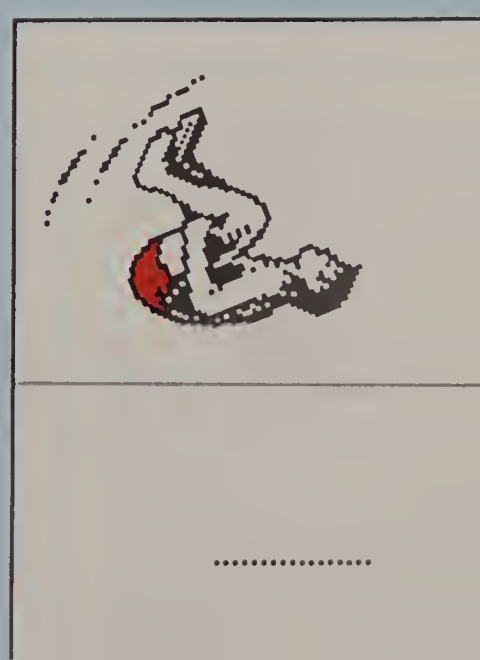
Remodel Your House with MacDraw

Neale McGoldrick

Working with MacDraw *is an excellent way to plan a renovation to your house. The process of creating clear plans helps you imagine what the finished project will look like.* MacDraw *enables you to work accurately because it is easy to draw to scale. Once you finish a basic floor plan, you can enlarge sections of it to include details like the wiring in the kitchen or the layout of floor tiles.*

MacDraw also facilitates working with a building contractor. Detailed layouts make it easy to talk precisely about space. Quality floor plans also make possible careful cost estimates. The detail leaves little room for exaggeration about the work that needs to be done and should result in lower costs and fewer surprises as the work progresses.

The best aspect of a *MacDraw* design is the ease with which it can be changed. As you talk with contractors, they may suggest ideas you haven't considered. When a carpenter has to move a doorway because of a structural problem, you can see how the door looks 6 inches closer to the window. The Flip and Rotate commands facilitate rearranging cabinets and furniture. Plans also offer a clear record of the proposed work. Attaching copies of the design to the builder's contract should help clarify misunderstandings about how many wall switches were agreed on or where the skylight was supposed to go.



Getting Started

To begin a renovation project, measure the space in question and sketch the layout on paper. Make sure to note the exact dimensions, but don't bother trying to draw the pencil version to scale because *MacDraw* takes care of that once you transfer the measurements to the screen.

Open *MacDraw* and specify with Drawing Size on the Layout menu how large you want the final drawing. Drawings that fit on one or two pages are large enough for most layouts, although it is possible to use *MacDraw* to create huge, blueprint-sized plans. When you print the layout, the Imagewriter or the LaserWriter prints the segments of the drawing sequentially on separate pages, which you can trim and tape together to form the larger drawing. Alternatively, you can reduce a drawing to fit on one page. With the Imagewriter you can reduce a drawing to 50 percent of original size. With the LaserWriter you can reduce or enlarge to any size from 25 percent to 400 percent.

Once you measure the space in question and decide on an appropriate size for the finished drawing, you are ready to select a scale. Pick a simple one, such as 1 inch equals 2 feet. Select Show Rulers and Show Size from the Layout menu so that you can see the measurements of each object as you draw. Rulers can be selected in centimeters, although materials for American building trades are still generally quoted in feet and inches. *MacDraw*'s grid, which is turned on when you open the program, limits the placement of objects to ¼-inch increments. You may need to turn the grid off when you work with irregular measurements (see Figure 1).

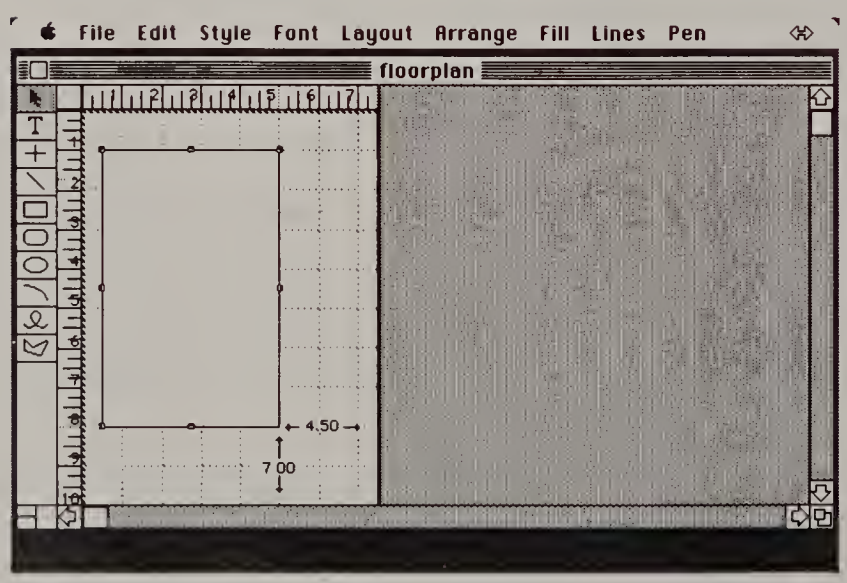


Figure 1
Accurate layouts are simple to create with MacDraw *because rulers and guidelines are present along the horizontal and vertical axes, and the program can list at the lower-right corner the dimensions of each shape as it is drawn.*

Creating the Floor Plan

Begin the layout by selecting Reduce to Fit from the Layout menu so that the entire page is visible at once. Sketch the space, using the rectangle tool to define the longest and widest dimensions. Use the straight line tool and more rectangles to modify the shape of the original rectangle to match your floor plan. Draw lines to separate the rooms and mark openings for windows and doors. When you want to add details such as electrical switches and air vents, you can use Normal Size on the Layout menu to enlarge the image. Then reduce the plan again to view the page as a whole. Once the outline is correct, erase the original rectangle with the backspace key. You can also erase part of a line by shortening it, but you can't erase part of a geometric shape. Instead, cover the part you want to delete with a white borderless shape.

The more complete the technical details are, the more control you have over the finished work.

Now you add dimensions to the plan. Professionally drawn plans show measurements penciled along the edge of the drawings. You can duplicate that effect with *MacDraw*'s double-headed arrows. When you work with long lines that extend beyond the screen, it is sometimes difficult to tell whether you are moving a line or lengthening it. The easiest way is to watch the size. If the numbers do not change, the line is being moved without being lengthened.

Once the outline of the floor plan is complete, you can fix it into place so that portions are not accidentally moved during later work. Choose Select All from the Edit menu and Lock from the Arrange menu (see Figure 2).

Structural Changes

Once you complete the plan, use Save As to create copies that you can modify to detail the plumbing, heating, and electrical systems. Mark all existing pipes, radiators, and outlets so you can plan around them because leaving in place pipes or switch boxes could mean a considerable savings in your renovation budget. The more complete the technical details are, the more control you have over the finished work (see Figure 3). Should the door to the bedroom open out or in? How high off the floor should the wall outlets be? You can easily compare alternatives with *MacDraw*

Furnishing the New Building

Adding furniture and appliances to the completed floor plan is fun, and it may help you fine-tune your design. If you draw the furnishings to scale in blank space on the screen and then move them into position, you can test, for example, whether your couch will fit in the new bay window. Objects like stoves, which require several elements–a rectangle plus circles for the burners–can be combined into one object with the Group command from the Arrange menu. Once grouped, the entire appliance, including its label, can be repositioned or rotated as needed. Both the Group and Lock commands can be undone if changes are required. With *MacDraw* it is easy to sketch appliances and kitchen cabinets and move them around endlessly. Would you rather have kitchen drawers 18 inches wide next to a 30-inch cabinet or 12-inch drawers next to a 36-inch cabinet? Prefabricated kitchen cabinets come in standard sizes, and most companies that sell cabinets will give you a list of sizes to help you plan.

Visualizing the Final Look

In addition to drawing floor plans for your renovation, you can draw elevations. Elevations are ceiling-to-floor cross-section views, which can be drawn in two dimensions or enhanced with a three-dimensional perspective. You can draw an elevation to mark the height and width of cabinets or furniture, for instance, without giving a sense of perspective (see Figure 4). The simple, two-dimensional elevations are useful for checking the position of windows, doors, and electrical outlets as well as for deciding whether a wall is too cluttered with objets d'art. Put all major objects in the elevation, including paintings on the wall. Shading the furnishings helps you estimate mass. Against light walls, dark furniture tends to look more massive than light furniture, while the reverse is true against dark walls. Use the gray patterns to simulate the effects of light and dark colors. Details like molding and trim are not necessary, although they provide a clearer idea of the finished space.

Three-dimensional elevations are hard to draw unless you have some training, but they convey to the untrained eye what the finished rooms will look like much better than flat drawings do. It is easier for you to spot the need for an extra lamp, for example, or to appreciate the difference between plain and paneled doors. The elevations with perspective can also assist you to communicate to the builder the look you are trying to achieve (see Figure 5).

You can go even further to envision the details of the finished room. How many times have you bought extra lumber or tile because you weren't sure how

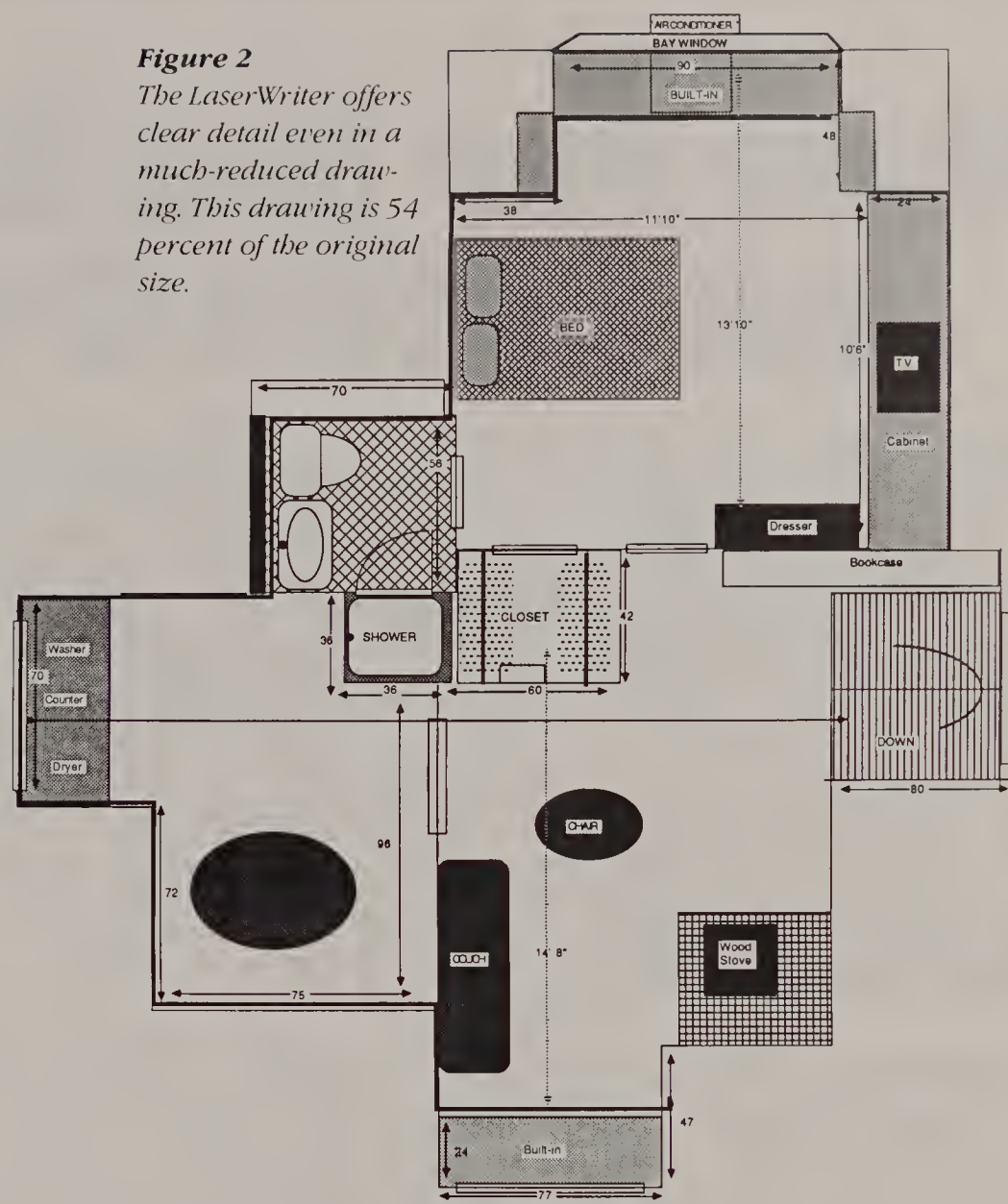


Figure 2
The LaserWriter offers clear detail even in a much-reduced drawing. This drawing is 54 percent of the original size.

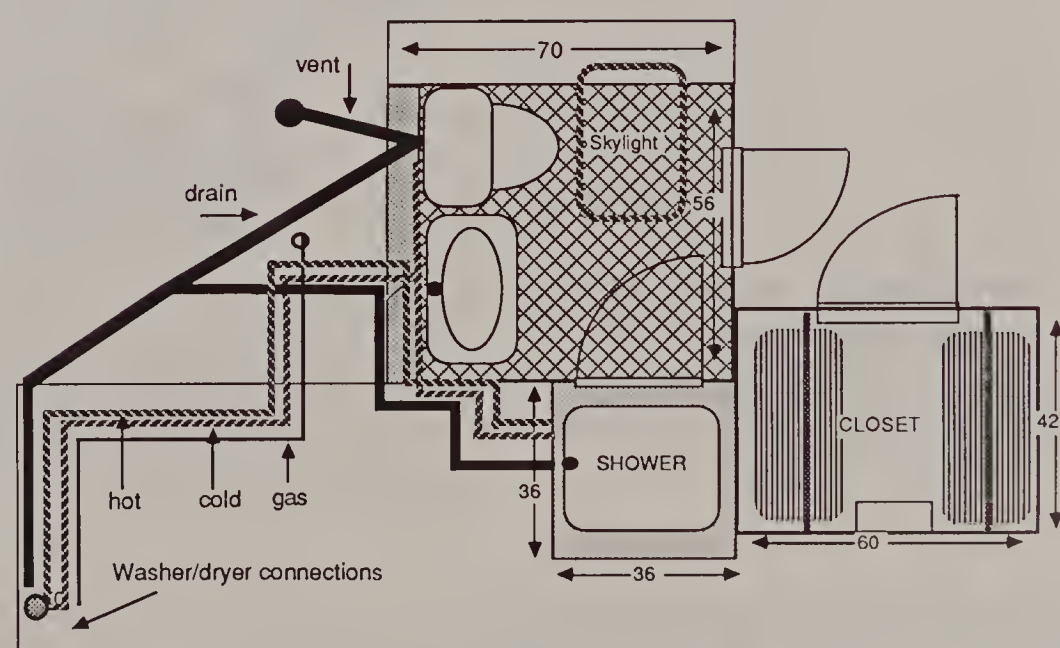
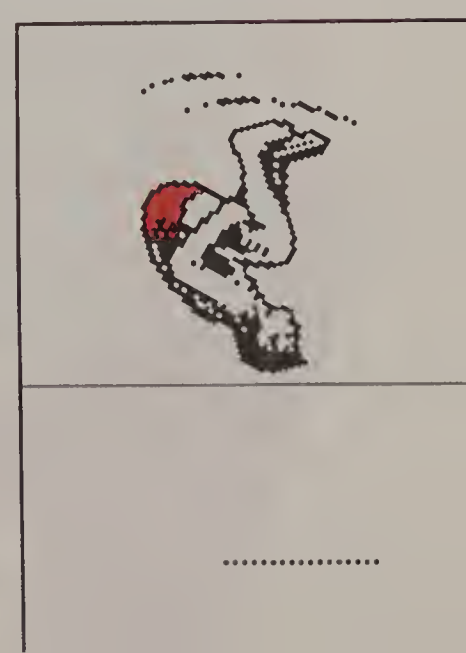


Figure 3
For detailed work such as the placement of pipes, small sections of a drawing can be enlarged and printed separately.



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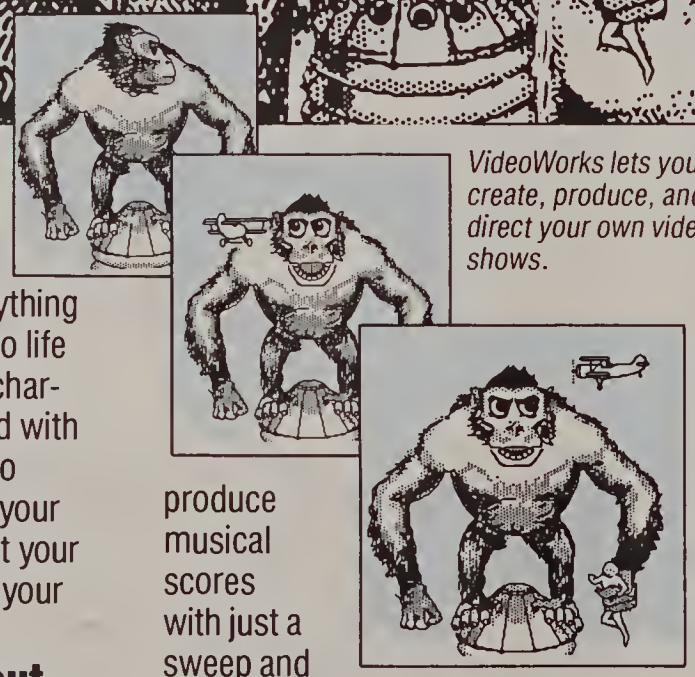

VideoWorks lets you create, produce, and direct your own video shows.

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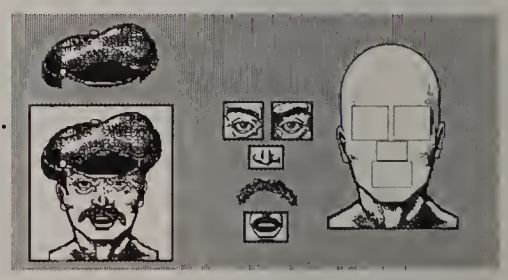
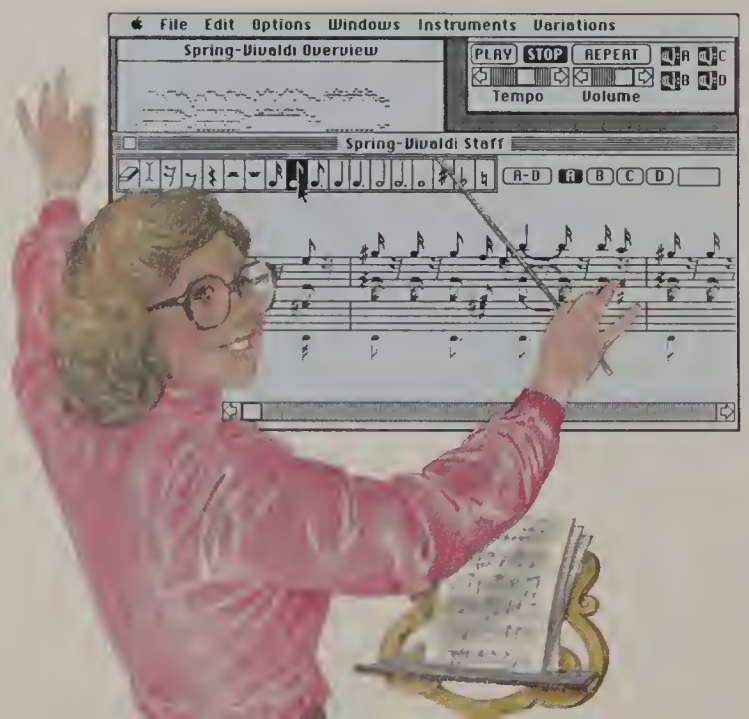
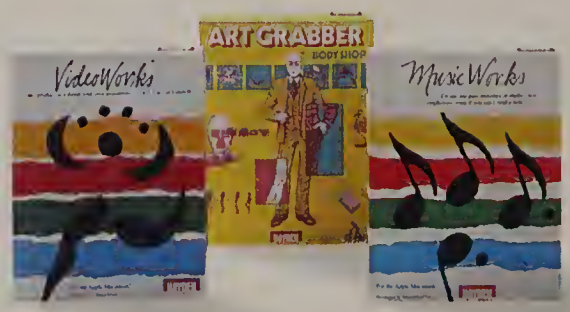
Hayden creativity tools are available for the Macintosh at your local software dealer or contact Hayden Software, 600 Suffolk Street, Lowell, MA 01854, or call 800-343-1218.



Make faces in a blink of an eye with BodyShop.



MusicWorks and you can make beautiful music together.



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HAYDEN SOFTWARE

much you needed? Because *MacDraw* images are drawn to scale, you can lay out the exact number of tiles you need for walls and floors. When you work with a tile layout, start from the center and work toward the edges. Try to use as many whole tiles and as few cut tiles as possible (see Figure 6).

If you are accustomed to refining details in FatBits, you will miss the feature in MacDraw, but several MacDraw tools facilitate precise work.

For other types of detail–replicating an antique molding, for example–it may be necessary to work in *MacPaint* and then copy the image into *MacDraw*. Take care when moving *MacPaint* to *MacDraw*, however. Once the image has been pasted into place, it will be fragmented into sections along the grid lines of *MacDraw*. To maintain the integrity of the *MacPaint* image so that it can be repositioned, assemble the sections with the Group command.

If you are accustomed to refining details in FatBits, you will sorely miss them in *MacDraw*. However, several *MacDraw* tools facilitate precise work. In addition to using the grid, you can align selected objects along their tops, bottoms, centers, or sides.

Finishing the Job

MacDraw puts in the hands of amateurs the tools to produce polished technical drawings. Whereas *MacPaint* came to the aid of people who can't draw a straight line, *MacDraw* takes the straight line one step further, offering accurate, scaled measurements and exact placement on the page. By the time your renovation is done, the plans will no doubt have been through numerous revisions, but they will have served as a guide for your ideas from start to finish. □

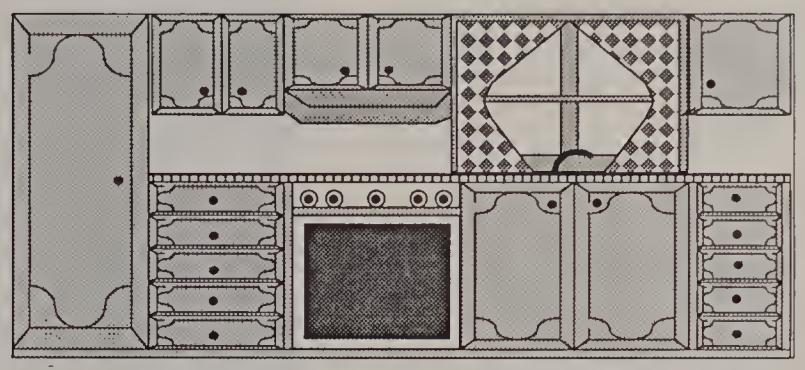


Figure 4
An elevation of the kitchen wall makes it easy to try out different placements for modular cabinets.

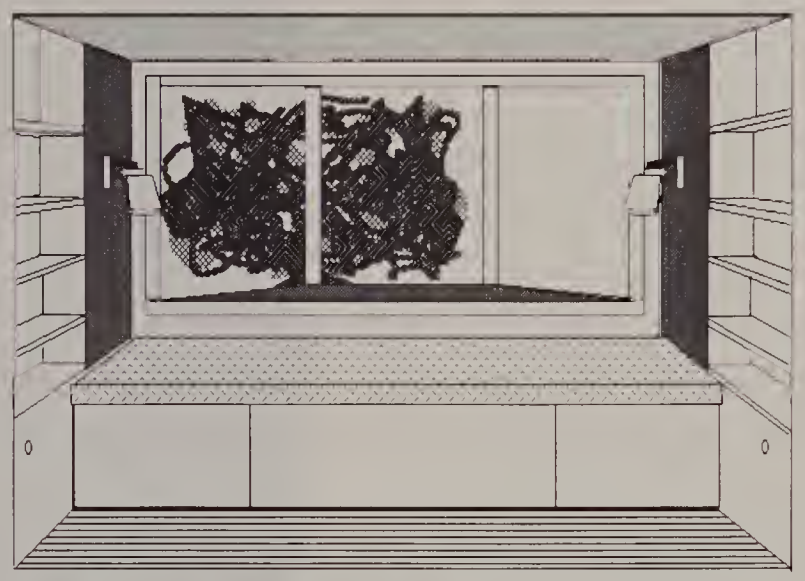
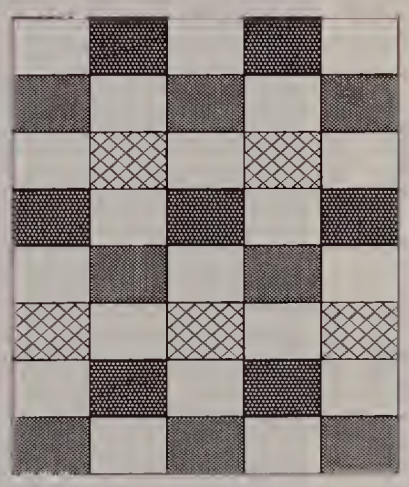


Figure 5
A three-dimensional elevation helps you visualize a finished area. Drawing in perspective can be tricky, since MacDraw *does not measure angles. Use Flip Horizontal to balance the angles on the left and right sides of the drawing.*



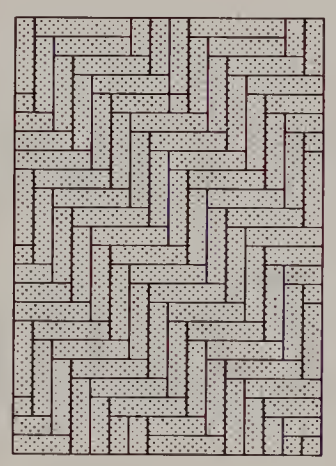
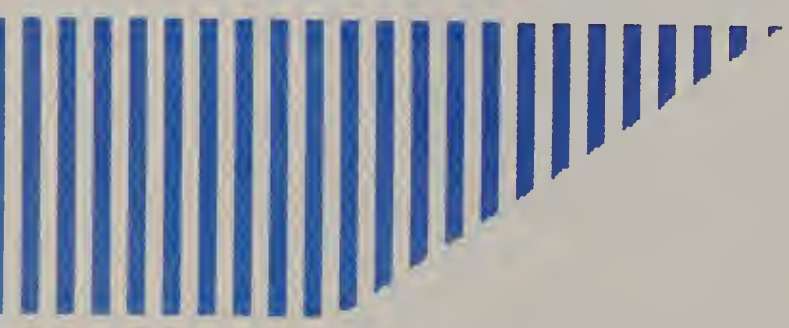


Figure 6
Laying out tile for floors and walls is one of the simplest uses of MacDraw.

Neale McGoldrick is a free-lance writer and the author of Mouseplay, *a book on* MacPaint *forthcoming from Datamost.*

Recovering a Damaged Disk



Jim Heid

Can't open an important document? Here are tips for resuscitating a disk in disrepair

Disk illness. The symptoms are familiar, and the onset is usually signaled by a desperate cry from a panic-stricken user. Early warning signs are rare but may include an endless series of "Please insert the disk" messages. More often, the illness remains latent until the terminal stage, when it manifests itself through the message, "Sorry, a system error has occurred." By then, it's too late. Subsequent attempts to open a document on the disk result in the message, "This document can't be opened." Your work appears to be gone, and your only alternative seems to be to take a deep breath and start over.

Disk problems can be caused by anything from power fluctuations to faulty software or hardware. Sometimes the fault is yours. Perhaps you shut down the Macintosh without ejecting the disk or mistakenly put an important document in the trash. Whatever the cause, the result is the same: frustration.

Fortunately, all is not lost, thanks to programs such as *Fedit, MacTools,* and *MacZap.* These utility programs, called *disk editors,* bypass the Finder's document-opening procedures and look directly at the information on the disk (see "In Case of Emergency"). Unlike the Finder and application programs such as *MacWrite,* disk editors don't assume that data on the disk is organized in a particular way. Instead, they examine the information in the order it's found. Disk editors let you access any portion of a disk, even an area that would otherwise be considered damaged. You can even recover documents that were thrown in the trash by mistake.

Be advised, however, that disk editors aren't a surefire cure for disk ailments. It's possible that a system error could damage a disk in such a way that a disk editor can't decipher the information. The best way to avoid disk problems is to back up your work frequently.

Using a disk editor requires you to peek behind the Mac's facade and learn some technical details and terms. You don't have to be an expert to use a disk editor, but just as an understanding of the human body helps a physician diagnose an illness, an understanding of how disks work helps when a disk develops a problem (see "How the Mac Keeps Track of Files").

The Disk Revealed

A disk is a 3½-inch platter coated with a magnetic recording material and divided into 80 concentric circles called *tracks.* The tracks are numbered consecutively from the first track at the edge of the disk. Unlike the rings of a tree, the boundaries that define each track are invisible. They're magnetic boundaries recorded on the disk when it's initialized.

Each track is divided into wedges called *sectors* (see Figure 1). The number of sectors in a track depends on the track's location. Because of their bigger circumference, the tracks that are closer to the disk's edge have more sectors than the tracks closer to the center. One sector can store 512 bytes of information, which can be part of an application, a document, or the Macintosh's System files. Since a byte corresponds to one typed character, one sector can hold, for example, roughly 100 words of a *MacWrite* document.

Each sector on the disk is preceded by 12 bytes of special information called a *tag.* Just as the heading at the top of every page in a book indicates which chapter the page belongs to, a tag indicates which file the sector belongs to. Disk editors can use the information in the tag to reconstruct a lost or damaged file.

A Damaged Desktop

Just as surgery is not the cure for the common cold, a disk editor is not the first measure you resort to when you encounter disk problems. One common ailment can be repaired without a disk editor. If the Macintosh crashes when you insert a disk while using the Finder, the problem may lie with the disk's invisible Desktop file, which the Finder uses to keep track of folders and icons.

The Mac has a built-in feature for reconstructing the Desktop file. Hold down the ⌘ and Option keys and insert the suspect disk. Release the keys when you see the disk's icon appear on the desktop. The Desktop file is reconstructed, though with Finder version 1.1g your files are no longer

(continues on page 110)

In Case of Emergency

When disk problems occur, you won't have time to shop for a disk editor. Here are three editors that can help you in a disk emergency.

Fedit

John Mitchell's *Fedit,* meaning *file editor,* is like the rare auto mechanic who can not only fix anything but also explain your car's problems in understandable terms. *Fedit* was among the first Macintosh disk editors and has been improved since it first appeared on CompuServe's MAUG in November 1984. Version 3.0 requires you to know a little about disks and how they are organized. Recovering a damaged file involves reading each sector of the file into a buffer, then writing the contents of the buffer to a new file.

Recovering a deleted file is more complicated. One way to recover a file from the trash is to search the disk for text that you know was in the lost file. Once you find the sector containing the text, you can obtain the file number from the tag information and search for the remaining sectors with that file number. You recreate the file by alternately locating and then copying each sector to a new file. According to Mitchell, version 3.5 includes commands to recover deleted files and to recreate the directory, the volume map, and the tags.

Fedit is the only disk editor of the three discussed here that you can use to repair a damaged startup disk or to recover files from a hard disk that doesn't use tags.

Fedit is available through user groups and MAUG as "shareware," which means that you can download or copy the program, but you must pay $30 if you decide to register it.

Registered owners receive a manual that explains the technical intricacies of disk organization. Version 3.5 is available only to registered owners. The best Macintosh disk editor available, *Fedit* is a bargain at $30.

MacTools

Central Point Software's *MacTools* is the general practitioner of disk doctors. The program lacks many of *Fedit*'s sophisticated features, but it conveniently lets you erase, copy, and rename files or disks and even start other applications without having to return to the Finder. *MacTools* is also a bargain. The product costs $39.95 and includes *Copy II Mac,* an application that lets you make backup copies of copy-protected disks.

Recovering deleted files with *MacTools* is much simpler than with *Fedit* 3.0. *MacTools* searches a disk's tags and recreates directory entries for deleted files, naming them RecoveredFile1, RecoveredFile2, and so on. You can resurrect a file's type and creator signatures using *MacTools'* Info-Edit command. Unfortunately, *MacTools* offers no search facility to help you locate text in a specific file. You have to use a recovered file's date and time information or examine several sectors from each file for text that looks familiar in order to determine which file is the one you need.

Its file- and disk-copying features make *MacTools* unique among disk editors. You can select groups of files for copying or deletion by shift-clicking on each file or by searching for certain portions of the file names. These features, combined with the ability to start an application, let you use *MacTools* as a replacement for the Finder (see "MacTools Treatment"). Simply change *MacTools'* name to Finder, and you'll return to it whenever you quit an application, giving you convenient access to its disk-doctoring abilities.

MacZap

If *MacTools* is the general practitioner of disk editors, MicroAnalyst's *MacZap* is the specialist. Loaded with features useful to programmers, *MacZap* is the most technically advanced, and, at $60, the most expensive Macintosh disk editor. Unfortunately, the product is awkwardly designed and difficult to use.

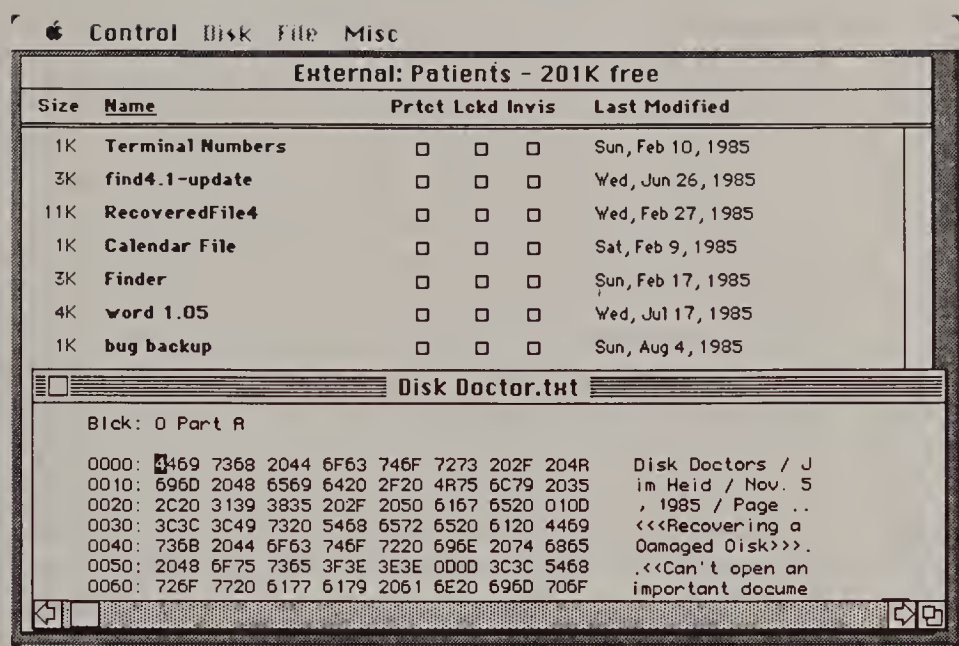
MacZap's approach to recovering deleted files differs from that of *MacTools.* While *MacTools* resurrects all the deleted files on a disk and leaves it up to you to determine which one you want, *MacZap* resurrects only the file you want. The catch is that you must supply the file's unique number in advance. You determine its number by searching for known text or by using the Deleted File Number List command, which displays a list containing the file numbers of deleted files along with the

dates of their creation.

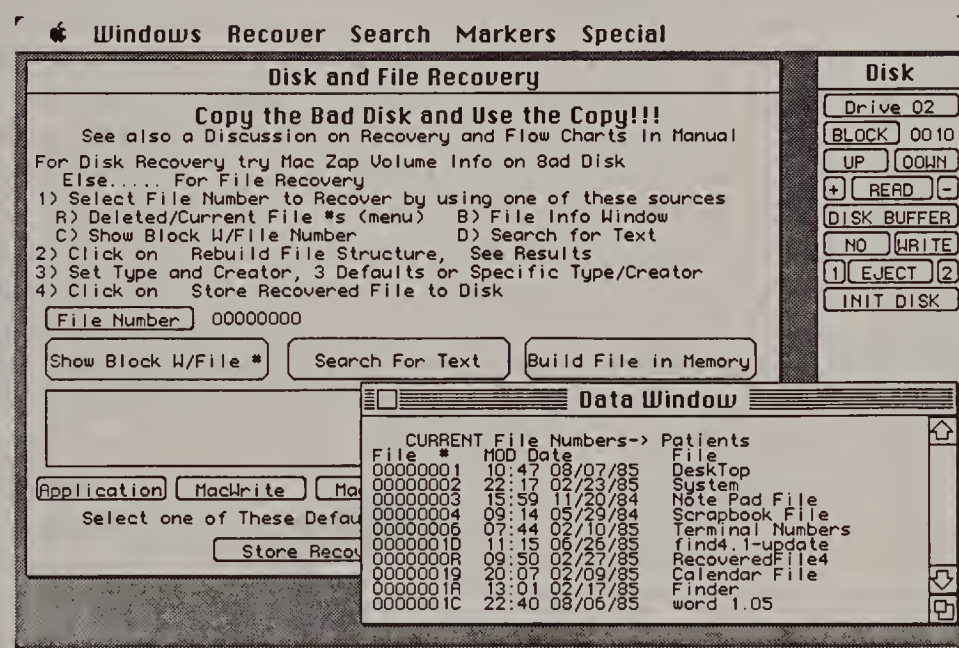
This approach requires you to understand more about Macintosh disks, such as what file numbers are and how they work, in order to recover a deleted file. *MacZap*'s intended audience of programmers and technical wizards already has that understanding. But for a nontechnical person who simply wants to rescue a lost file, *MacZap* is more complicated than it has to be.

MacZap's awkward design shows up often. During a file recovery session, for example, you work with a busy-looking window (see "MacZap Recovery"). This window summarizes the file recovery process using instructions that make file recovery seem even more difficult than it is.

Programmers and advanced users determined to struggle with *MacZap* will find some advanced features, including a disassembler, which decodes a program into its 68000 machine-language instructions, and a graphics window that displays the contents of a disk or the Mac's memory as an image. *MacZap* also comes with a disk-copying application that shares *MacZap*'s poor design. If you simply want to examine disks and recover an occasional lost file, *MacZap* offers no advantage over *Fedit* or *MacTools*.



MacTools Treatment
You can run applications directly from MacTools' *directory window by selecting the application and choosing Launch Application on the Control menu. If you select a document and choose View Edit from the File menu, you see the data displayed in hexadecimal and ASCII codes, as shown in the active window.*



MacZap Recovery
The steps required to recover a file with MacZap *are outlined in the Disk and File Recovery window. You locate the file number with the Current File # or Deleted File # command, enter the file number, reconstruct the file in memory, and then write it to disk.*

in their folders. With Finder 4.1 your folders remain intact, but their names are changed to Unnamed 1, Unnamed 2, and so on.

First Aid

When a disk error rears its ugly head, don't panic. Don't frantically switch off the Macintosh or yank its power cord. Instead, try to quit the program you're using, return to the Finder, and eject the disk. If the Mac is displaying the "system error" bomb, click the Restart button and hold down the mouse button to eject the disk.

Once the disk is ejected, lock it by moving the plastic tab in the corner of the disk so you can see through the square hole. Next, switch off the Macintosh for several seconds. Turn it back on and insert the suspect disk. If the Macintosh starts properly, the disk may not be damaged. The Macintosh or the application software may be faulty. To be safe, however, copy all important files to a new disk. If the new disk causes problems–perhaps it spins endlessly or causes the Mac to crash–try the following steps:

- Work with the copy of the damaged disk. Disk editors do not protect you from making a bad situation worse, so avoid magnetic malpractice by working only with a copy. If you can't copy the disk using the Finder, try copying it with an application such as *Copy II Mac*. If all attempts to copy the disk fail, make sure the disk is locked and proceed to the next step.
- Try to salvage damaged documents by opening them from within the application that created them. Start the application from a working disk, choose the Open command, then insert the suspect disk and try to open the damaged document. Waiting until the last minute to insert the bad disk reduces the chances of crashing the Macintosh again. If you can open the document, choose the Save As command and save the document on a different disk. Make sure you unlock and erase the damaged disk before you recycle it.
- If you're unable to open the damaged document, the disk probably has serious problems, and it's time to turn to a disk doctor.

In the Emergency Room

If you need a disk doctor to repair a damaged disk, *Fedit* is one of the best disk surgeons around. First make sure the disk–preferably a copy of the original–is unlocked. Start *Fedit,* then choose Open File from the File menu. Insert the damaged disk in the external drive, if you have one. Select the name of the damaged file from the file selection dialog box, and click Open. If you don't have an external drive, you can click Eject to eject the startup disk. When you open the file, you see the 512 bytes in the first sector displayed as ASCII characters.

You reconstruct a file by reading each sector of information into a memory buffer, then writing the sector to a new file (see Figure 2). To create the new file, choose Create File from the Special menu. Type the new file name and then choose Write Sectors to File from the Special menu. A dialog box appears, giving you a chance to enter information such as the number of sectors to write and where to begin. Since the default settings are adequate for recovering most files, click OK.

For each remaining sector in the file, choose Read Next Sector from the Edit menu and then Write Sectors to File, alternately reading and writing sector by sector until the entire file has been copied.

Once you have copied the file, choose Find File Attributes and enter the type and creator fields, called the file's signature, for the type of file you are reconstructing (see Table 1). If you don't know, you can open the damaged file to look at the original file type and creator.

Close the damaged document and return to the desktop by choosing Quit. Double-clicking on the reconstructed document should start the proper application program and open the revitalized document. If the file opens and you see the text, the operation was a success and you will have saved yourself hours of retyping.

If you want a simpler method of rebuilding damaged files, you'll have to wait for version 3.5 of *Fedit,* which reportedly includes new commands to rebuild a damaged file using tags. Most floppy disk files contain tags; however, most hard disk files do not. Any method of file recovery that depends on tags will not work with most hard disks. In fact, the procedure described above is the only way you can recover files from a hard disk.

Repairing the Startup Disk

Turning on the Macintosh in the morning and inserting the startup disk only to be greeted by a frowning face can make you wish you'd never gotten up. When the sad Mac strikes, *Fedit* can save you the frustration of losing an entire disk.

Generally, the appearance of the frowning Macintosh icon when you insert a disk is a sign that the first two sectors of the disk, which contain the startup information, are damaged. You can restore the

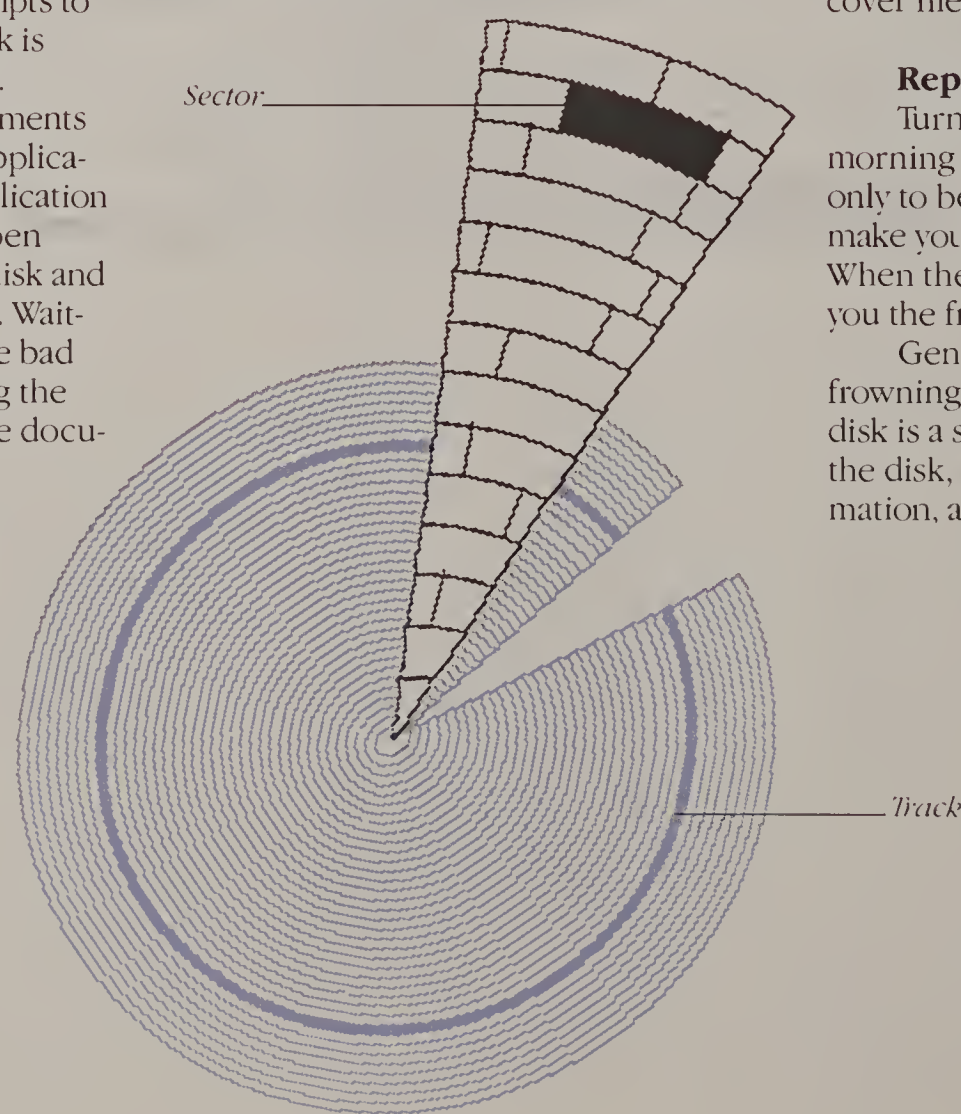


Figure 1
A disk is divided into 80 tracks (concentric rings) and 800 sectors (wedges within each ring). The boundaries that define each track and sector are magnetic boundaries recorded on the disk when it's initialized. Disk editors let you read the data in any sector.

How the Mac Keeps Track of Files

The first 16 sectors of a disk–roughly 8000 bytes–aren't available for storing document or application data. The first 2 sectors contain startup information that the Macintosh reads when you switch it on and insert the disk. The third and fourth sectors contain the *master directory block.* Together with the *file directory* contained in the next 12 sectors, the master directory block allows the Mac to keep track of where documents are stored.

The master directory block is divided into two areas. The first 64 bytes contain information about the disk volume, including its name, the dates of its creation and last modification, and other technical details. The second portion of the master directory block contains the *allocation block map,* indicating which of the disk's sectors are being used by applications and documents.

Think of the allocation block map as a restaurant seating diagram that the maître d' uses. When a large group arrives, the maître d' checks that enough tables are available and then marks on the diagram to indicate which tables are being taken by the new arrivals. Similarly, when an application prepares to save a document or when the Finder prepares to copy one, the Mac first checks the disk's allocation block map in search of enough free sectors to hold the document. It then makes its notations in the block map to indicate that certain sectors will be used by that document.

The Table of Contents

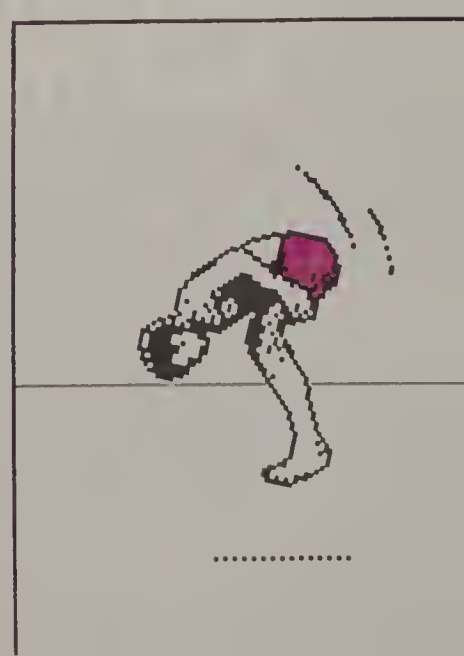
A file directory, meanwhile, is comparable to a book's table of contents. The directory contains an entry for every document and application on a disk. An entry contains all the file's vital statistics, including the dates and times of its creation and last modification, the location of the file's icon on the desktop, and the location of the file's contents on the disk.

A directory entry also contains a file's *signature*–two cryptic, four-character abbreviations that indicate the file's type and creator (the application that created the file). The Imagewriter system file, for example, is the type PRES, with the creator IWRT. A *Microsoft Word* file's type is WDBN, with the creator WORD. The Finder uses the signature to start the appropriate application when you open a document.

Another important portion of a directory entry is the *file number.* Every file on a disk is given a unique number when it is created. Two factors make file numbers vital to recovering lost files. First, a file number is never reused if its file is removed–much like how the Boston Celtics have never reused Bob Cousy's number since they retired it. Second, the file number appears in the tag–the 12 bytes that precede every sector–of that file.

Why are file numbers so important? When you delete a document, its directory entry is cleared, and the allocation block map is updated to indicate that the file's sectors are available. The sector tags and the data in the sectors, however, aren't touched. You can use a disk editor to scan every sector's tags, reconstruct the directory entries, and resurrect deleted files. It's as if someone ripped apart a book and you located and reconstructed chapter ten by scanning the headline at the top of every page.

This technique, however, has a catch. Since the sectors of a deleted file are made available for new files, some or all of the sectors could be used at any time. Therefore, it's possible for a resurrected file to be incomplete if you added files to the disk after the original file was removed. The deleted file is like diners who leave their table but then change their minds and decide to stay. There is a chance their table will have been taken by a new group of people. So if you determine that you've removed the wrong file, don't use that disk until you resurrect the file.



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startup information, called the *boot blocks,* by first choosing *Fedit*'s Open Volume command from the File menu. Insert the damaged disk into the external drive or click Eject to free the internal drive. When you click Open, you see the contents of the first sector. Choosing the Write Boot Blocks command from the File menu rewrites the information in the boot blocks. *Fedit* also contains an Edit Boot Blocks command that lets you edit the system information. The makeup of the boot block is described in *Fedit* documentation.

Becoming an Intern

With a knowledge of how disks and disk editors operate, you're ready to begin your internship as a disk doctor. Practice examining and recovering deleted files from an old disk you don't need. To learn more about disks, read John Mitchell's *Fedit* manual and the chapters on the file manager and the disk driver in *Inside Macintosh.* The more you know about disks and disk editors, the better you'll be able to respond to a disk emergency. □

Jim Heid is a Contributing Editor of Macworld.

Fedit 3.0
John Mitchell
939 E. El Camino Real #122
Sunnyvale, CA 94087
Versions 3.0 and earlier available through user groups and MAUG
List price: $30 on approval

MacTools
Central Point Software
9700 S.W. Capitol Hwy. #100
Portland, OR 97219
503/244-5782
List price: $39

MacZap
MicroAnalyst Inc.
P.O. Box 15003
Austin, TX 78761
512/926-4527
List price: $60

Inside Macintosh
Addison-Wesley
Reading, MA 01867
List price: three-volume set $69.85, each volume $24.95

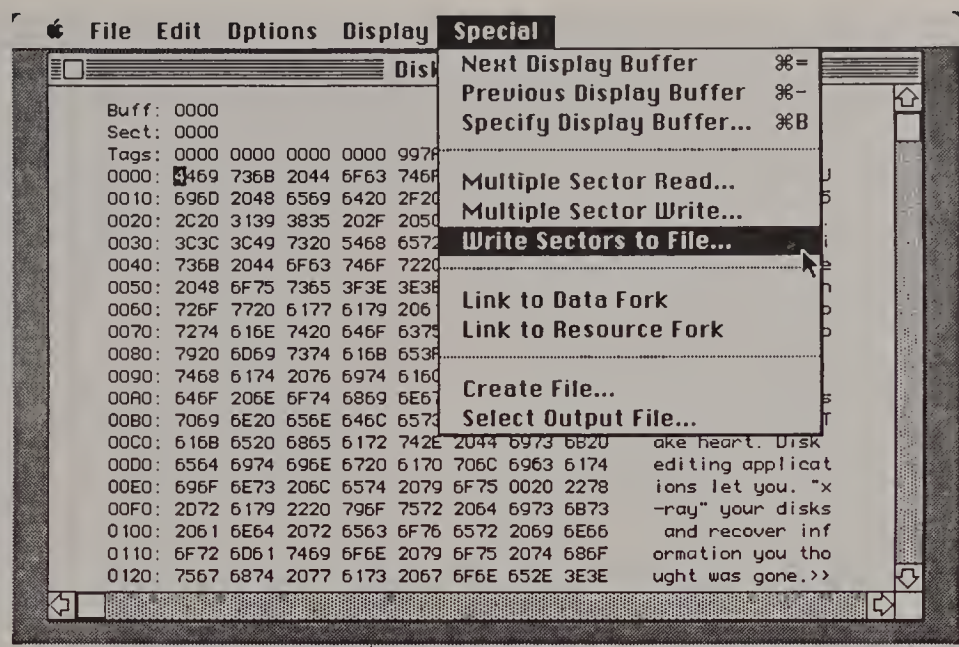
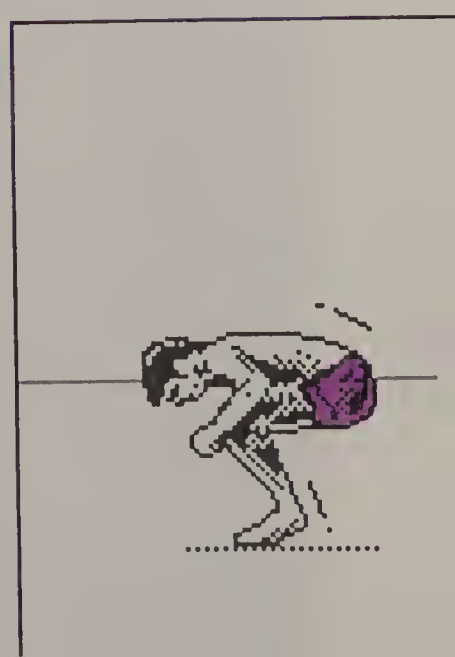


Figure 2
When you open a damaged file with Fedit, *information from the first sector goes into a buffer and appears on the screen. The Create File command opens a backup file, and Write Sectors to File copies the sector to the backup so you can rescue a file sector by sector.*

Application	File Type	Creator
1stBase	1STD	M1ST
Crunch worksheet	CALC	SOFD
Factfinder	FACT	NARU
Filevision	PICB	TELO
Jazz communications	JTRM	JAZZ
Jazz database	JDBS	JAZZ
Jazz form	JFRM	JAZZ
Jazz graph	JGRF	JAZZ
Jazz word processing	JWPD	JAZZ
Jazz worksheet	JWKS	JAZZ
MacBASIC binary program	BCOD	DONN
MacBASIC text program	BTXT	DONN
MacPaint	PNTG	MPNT
MacWrite document	WORD	MACA
MBASIC (B)	MSBC	MSBB
MBASIC (B) protected format	MSBD	MSBB
MBASIC (D)	MSBB	MSBA
MBASIC (D) protected format	MSBP	MSBA
MegaFiler	MFIL	MEGA
Microsoft Chart	MCBN	CHRT
Microsoft Excel macro	XLPG	XCEL
Microsoft Excel worksheet	MCBN	XCEL
Microsoft File database	ISAM	FILE
Microsoft Multiplan	MPBN	PLAN
Microsoft Multiplan (text only)	TEXT	PLAN
Microsoft Word document	WDBN	WORD
Microsoft Word glossary	GLOS	WORD
pfs:file database	PFSF	JANE
SmoothTalker document	TEXT	FRBY
ThinkTank	TEXT	TANK

Table 1
Type and creator information is assigned to a document when the document is created by an application. Once you have recovered a damaged document, you need to reenter type and creator information to enable an application to open it.



MacroMind's merry band strikes an album-cover pose near the Chicago storefront where they make programs together. The three gave up gigs in video games and joined forces to create Macintosh software.

The Software Rock 'n' Roll Band

Nicholas Lavroff

If you went looking for MacroMind's corporate headquarters on West Wolfram Street in Chicago, there is a good chance you would walk right by it. The old brick storefront bears silent witness to the activities that take place behind its doors. No signs proclaim it as the home of the company that created MusicWorks *and* VideoWorks.

Inside, however, the picture changes dramatically. Instead of ancient merchandise gathering dust on rickety shelves, the storefront now houses goods of a different nature: music synthesizers, electronic keyboards, Macintoshes and huge, brightly colored papier-mâché dinosaurs engaged in battle. This menagerie is the home of MacroMind's president, Marc Canter, and it is the closest thing MacroMind has to a corporate headquarters.

MacroMind is the brainchild of three very talented and cool guys from Chicago—Jay Fenton, Mark Pierce, and Canter. The company is structured like a rock 'n' roll band, with each member contributing his own

particular talent, resulting in a whole that is greater than the sum of its parts. In less than a year, MacroMind has developed three significant programs for the Macintosh. The group's first product, *MusicWorks,* is a "music processor" with instant playback capabilities. Their second product, Art Grabber, is a desk accessory that simplifies transferring art from a *MacPaint* document into other applications, such as *MacWrite* or *Microsoft File. VideoWorks,* MacroMind's most recent product–the pièce de résistance–is graphics animation software that, like *MacPaint,* may provide the only reason some people need to buy a Macintosh (see "A Moving Pixel Show" in this issue).

MacroMind programming wizard Jay Fenton wrote his first program during idle moments in high school algebra class. He worked for eight years as a video game software engineer before turning his attention to developing products for the Macintosh.

The Singer

No rock 'n' roll band could survive without a front man, and Marc Aaron Canter (whose initials, appropriately enough, spell *MAC*) fills that bill admirably. By far the most visible–and vocal–of the three, Canter spends most of his time traveling around the country, meeting with other Macintosh developers and demonstrating MacroMind's latest offerings at computer trade shows. A gregarious person, Canter is at his best showing *MusicWorks* and *VideoWorks* before a crowd of Mac devotees, winning them over with his easygoing patter and engaging smile. Had he lived a century ago, Canter would have been performing by gaslight in music halls, introducing singers and dancers, and keeping the crowd under control. Indeed, given Canter's drive and ambition, he probably would have owned the music halls.

Canter's background includes a fine arts degree in music–voice, opera, and electronic music–from Oberlin College, as well as work on video, kinetic sculpture, and sound at the School of the Art Institute of Chicago. His background in music made him the ideal coproducer of *MusicWorks,* for which he assumed the responsibility for the musical arrangements included on the program disk.

Before the Macintosh arrived on the scene, Canter worked for Dave Nutting Associates, a subsidiary of Bally, the pinball and video game giant. "Jay and Mark were working for Bally at the same time. We were interested in developing personal computer products that work in real time, allowing people to get immediate feedback on ideas they create with the program. For example, if you write a musical composition, you can immediately hear it played. To us the Macintosh was the first personal computer with enough capability to justify starting a software development company. We also liked the Mac's user interface and operating system," Canter says.

Originally, *MusicWorks* and *VideoWorks* were conceived as a single product called *SoundVision,* but MacroMind's publisher, Hayden Software, preferred it developed as two programs. Canter explains that one of MacroMind's design approaches is to get a product up and running fast so people can play with it. "We had an embryonic version of *MusicWorks* working on the Mac two days after the project was conceived. We then had friends play with the program. They told us what they thought of it and suggested additional features. Over the next two and a half months, Jay wrote the code, implementing many of the suggestions. We followed the same strategy when we developed *VideoWorks.*"

Canter attributes the success of MacroMind's products to a simple design philosophy: "We develop products that we would want to use ourselves. We enhance not only our own creative endeavors but also those of people in the Macintosh community."

One-time conceptual artist Mark Pierce made enough MacPaint *images in a few months to fill 5 megabytes of storage, and he wore the feet off his mouse in the process. Pierce gives the mouse a break occasionally to relax at the electronic piano keyboard at his side.*

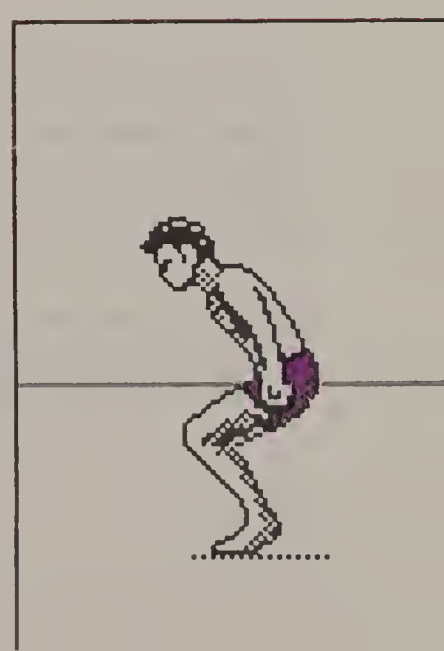
The Artist

In a sparsely furnished apartment with views of Lake Michigan and the city skyline, Mark Pierce, MacroMind's graphic artist, sits with his eyes glued to a Macintosh. He moves the mouse around in FatBits at dizzying speed as he polishes and fine-tunes a scene for a *VideoWorks* animation. Occasionally, he puts the mouse aside to finger a bass line on the electronic piano keyboard by his side, easing the pressure of constantly looming deadlines.

Pierce is so productive with the Macintosh that in a few months he created more than five megabytes—about 13 full disks—of *MacPaint* images, wearing the feet off his mouse in the process. As well as creating all the artwork for MacroMind's programs, he is working on a variety of other projects, including a *VideoWorks* animated "underground" comic strip.

Before the advent of the Macintosh, Pierce's medium was conceptual art, a form of expression consisting of staged "happenings" that, for the most part, seem to do little but mark the passage of time. On one occasion Pierce stacked 100 television sets in a room and tuned them all to "All My Children." On another occasion he fed subsonic tones to three huge auditorium speakers, with each speaker receiving a slightly different frequency. Although the resulting sound was below the audible spectrum, it made its presence felt in the form of floor-shaking vibrations. This particular performance did more than note the passing moments; it caused objects to fall off the shelves of every locker at the School of the Art Institute of Chicago.

Like his cohorts, Pierce arrived at his present occupation by way of the video game industry. Among his credits are the graphics for Bally's *Professor Pac-Man* and Coleco's *Richard Scarry's Electronic Word Book*. Pierce characterizes his current medium—the Macintosh and programs like *MacPaint* and *VideoWorks*—as the ideal sketchpad. "The Mac's black-and-white, high-resolution screen is perfect for sketching ideas quickly and easily. Because you don't have to deal with hundreds of colors or different brushes, you tend to concentrate on specific details of images, such as motion, gesture, shading, smoothness, and depth," Pierce says. When asked what improvements he would like to see made to the Macintosh, he replied, "Faster disk access, full-screen drawing capability, and a better explanation of Key Caps."



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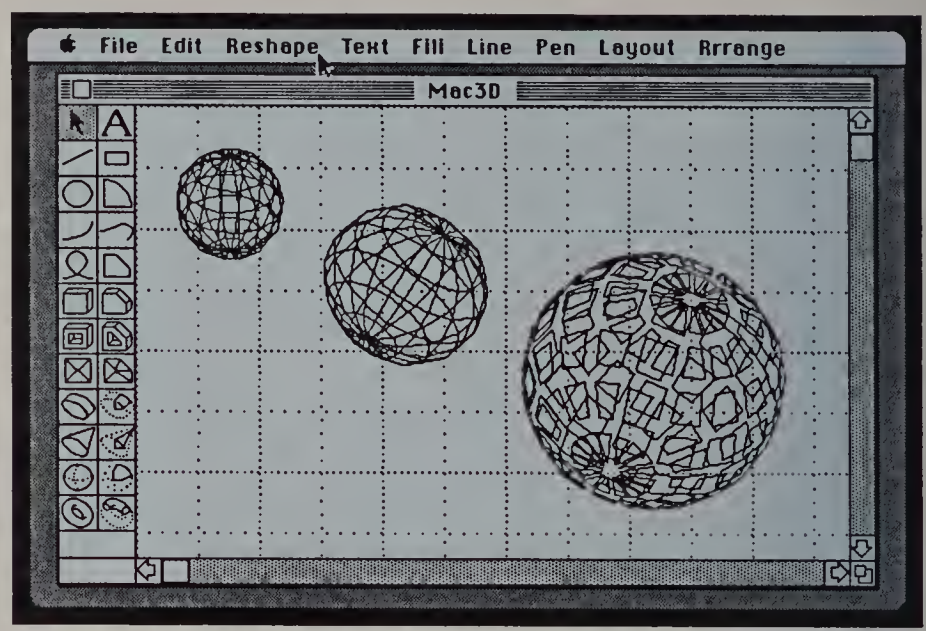
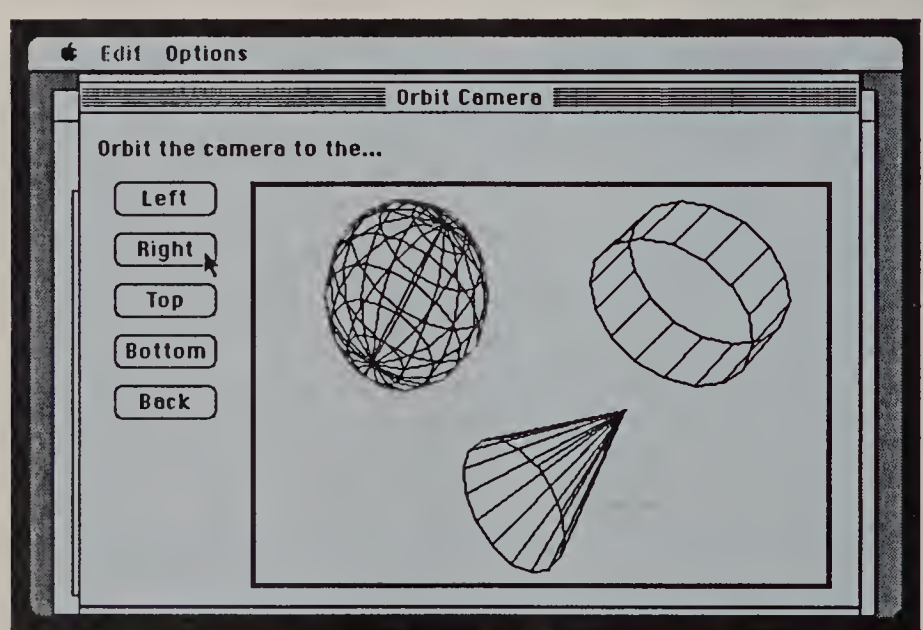
Use it to create technical or free form drawings and designs. Simply select from a palette of basic shapes and then stretch, flip, resize, reshape and/or rotate your drawing along any axis in three dimensions--much like you would shape a globule of clay and examine it in your hand. Features include:



- **Advanced tool palette.** Select Text, Freehand Drawing, or shapes like Rectangles, Ellipses (includes circles), Polygons, Pyramids, Polygonal Prisms, Polygonal Pyramids, Ellipsoids, Cones, Cubes, Cylinders, and Tori (doughnuts).



- **Moveable Camera.** Use our new Setup Camera option and observe a drawing from virtually any point of view--even from the inside looking out!

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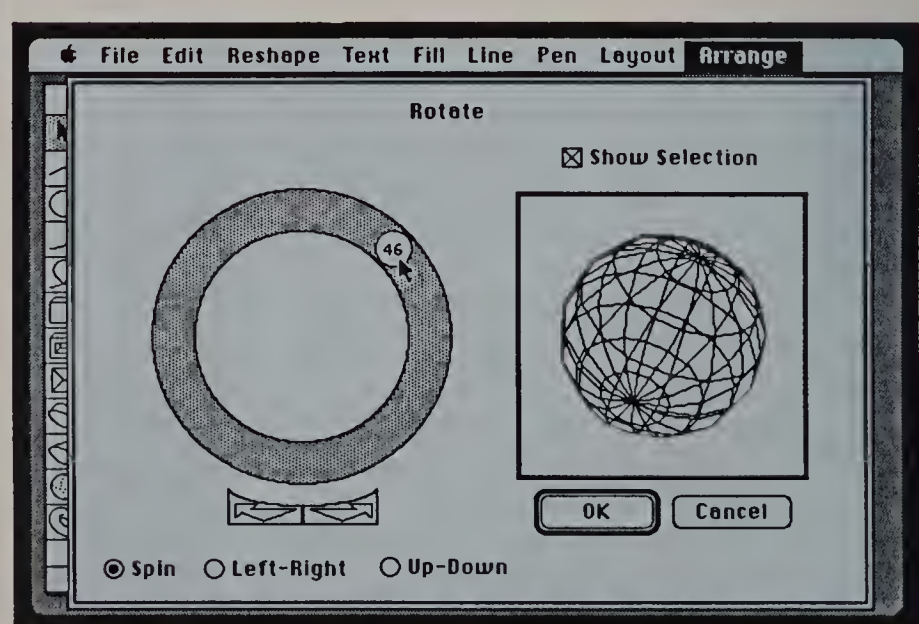

Mac3D requires a 512K Apple® Macintosh™ and an external disk drive.

For more information see your local computer dealer or contact:

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Homewood, Illionois 60430
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MacroMind impresario Marc Canter works as the front man of the trio, taking the group's products from trade show to trade show. When he's not on the road, Canter works in the storefront home that also serves as MacroMind's headquarters, amid dinosaurs and the tangled cables of a music synthesizer he designed.

The Composer

The programming wizard behind MacroMind is Jay Fenton, a software engineer with a career that predates Apple Computer. Fenton wrote his first program, a roulette game, during a class in high school algebra, in the days before personal computers even existed. Between 1975 and 1983, Fenton was involved in the video game industry. He was responsible for producing such hits as *GORF* and the Bally Arcade home video game system.

Fenton programs on a Lisa 2/10 flanked by two Macs—a 512K and a 128K—and his cats Sparky and Charcoal. His work space is crammed with evidence of his eclectic interests—ham radio gear, high-end audio equipment, Bally pinball machines and video games, and books and magazines on subjects ranging from light aircraft to the fourth dimension. A computer-era Renaissance man, Jay Fenton is able to conduct intelligent discourse on nearly any subject, providing it has to do with high technology.

Although Fenton is known as MacroMind's science officer, he is also interested in the arts. "I've always wanted to make movies, and later I became interested in music. Writing programs like *VideoWorks,* rather than database or spreadsheet applications, lets me combine my passions—and passion is what it takes to sit in front of a computer screen 18 hours a day writing programs."

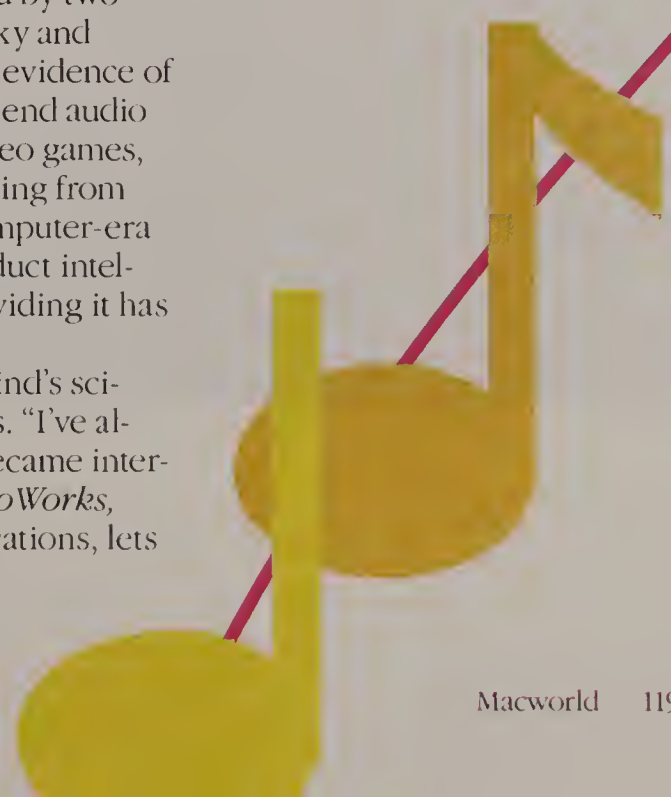
He learned programming on the Macintosh by modifying the sample programs provided by Apple and reading *Inside Macintosh,* which he found didn't include everything he needed to know about the Mac. "When I was writing *MusicWorks,* for instance, I found a bug in the ROM routine that controls the speaker volume," Fenton recalls. "We wanted to be able to adjust the volume while music was playing, but the Mac would beep each time you adjusted the volume. We also wanted the volume control on screen, so you wouldn't have to bring out the Control Panel from the Apple menu. To solve the problem I disabled the Mac's speaker control, wrote my own code to control the volume, and used the Resource Editor to replace the original volume-control graphic on the Control Panel with one that showed the volume control torn out."

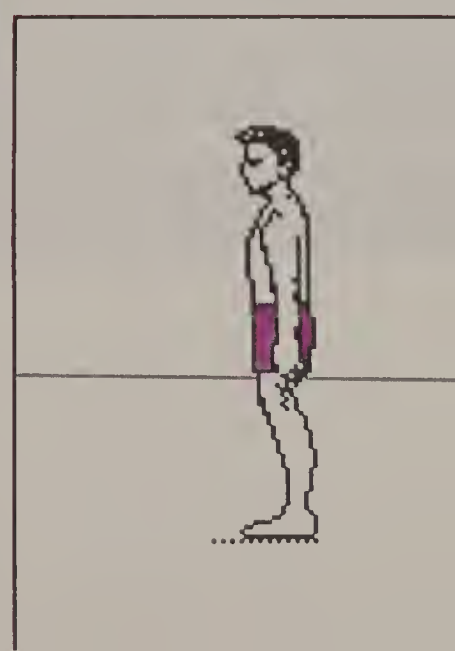
Fenton compares writing software to playing God: "You get to create your own world, and no matter what stage of development a program is in, you always feel like you have only seven days to get it into the stores."

As the Macintosh's house band, MacroMind undoubtedly knows how to satisfy its audience. Whether the group becomes the Beatles of the software industry remains to be seen. But the trio has certainly won the admiration of the Macintosh community with its popular programs. □

Nicholas Lavroff is a Contributing Editor of Macworld.

Art Grabber, MusicWorks, VideoWorks
Hayden Software Co., Inc.
650 Suffolk St.
Lowell, MA 01854
800/343-1218, 617/937-0200 in Massachusetts
List price: Art Grabber $49.95, MusicWorks $79.95, VideoWorks $99.95





More Than Meets the Eye

Robert Buderi

In a ground floor office near San Francisco's Fisherman's Wharf, a poetic story written in both English and the Clackamas dialect of the Chinook is neatly framed on the wall of a print shop called Bigelow & Holmes. Behind the iron grating guarding the shop's entrance, Charles Bigelow, Kris Holmes, and their colleagues are busy crafting unique typefaces for obscure languages like Chinook, as well as creating new families of typefaces for laser printers and computers like the Macintosh.

Until Bigelow came along, scholars were forced to transcribe the legends and histories in the language of the Chinook by hand. No typeface existed that could duplicate the alphabet's odd-shaped squiggles and thus help preserve the Chinook's literary tradition. While Bigelow's work with the Macintosh isn't as dramatic as his

Graffiti is just one of the graphic media that fascinate type designer Charles Bigelow. A combination of artist and scientist, Bigelow creates typefaces especially for computer screens and laser printers.

creation of the Chinook typeface, his goal is ambitious: to produce highly legible typefaces for computer screens and laser printers.

Bigelow, a young-looking 40, became interested in letter forms in 1966 when he began studying calligraphy at Reed College. He subsequently studied typography while attending the San Francisco Art Institute. In 1974 he became art director for the *Oregon Times* in Portland, where he met Holmes, a production worker and part-time calligrapher. In 1976 the two formed their own type design company, using Holmes's expertise in calligraphy to handcraft designs and Bigelow's expertise in typography to mold the forms into typefaces that could be used for commercial typesetting.

A few years later, while teaching at the Rhode Island School of Design, Bigelow learned how traditional typeface designs, such as Times Roman or Helvetica, could be adapted for computers. Digitizing makes the printing process faster, more versatile, and cheaper than the earlier methods of hot-metal or photo composition. The problem was that the engineers Bigelow met at typesetting equipment manufacturers couldn't explain why some of the aesthetic features of traditional typefaces, such as serifs, transfer less gracefully from the analog medium, in which fonts are formed from physical matrices, to the digital medium, in which fonts are formed electronically.

Kris Holmes works with Charles Bigelow in the analog division of their company, handcrafting new typefaces and creating calligraphic designs.

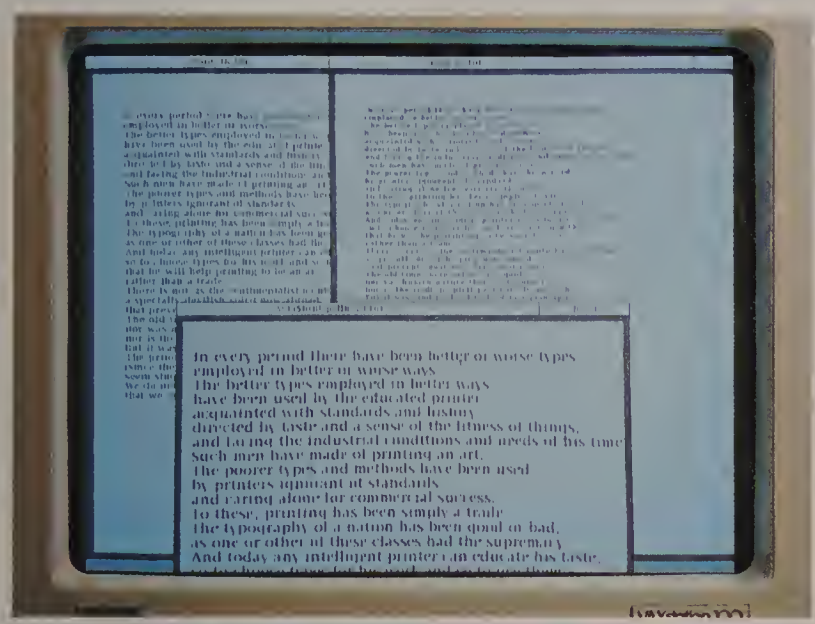
To investigate the problem, Bigelow studied digital type design at work and took courses in computer programming at Harvard University. In the process he wrote several articles about the relationship between computers and typography. The articles, along with the Chinook typeface, made his reputation in the field of digital typeface design. In 1982, after accepting a teaching job at Stanford University, Bigelow was awarded a prestigious MacArthur prize—$192,000 over five years—for his work. Last December he was named to Esquire's register of men and women under 40 who are changing America.

The Designer's Lair

The work at Bigelow & Holmes is done primarily in two large rooms referred to as the analog and digital divisions. Though the five employees move back and forth between the divisions, Holmes and Carol Twombly work primarily in the analog room. Bigelow and the firm's other two employees, Dan Mills and Donald Day, work in the digital division, converting the analog designs onto computers.

In the digital room, two Bigelow and Holmes typefaces—Pellucida and Lucida—have been digitized for computers. Pellucida is designed for computer screens and has already been released for DEC's VAXstation 100, a bit-mapped display workstation used with VAX minicomputers for programming and engineering applications. Bigelow and his colleagues are now adapting the typeface to the Macintosh screen (see Figure 1). Lucida is the counterpart of Pellucida and is the first font family designed especially for laser printers. Lucida is now available for the Imagen series of laser printers, but Bigelow says it could be implemented on Apple's LaserWriter or the Hewlett-Packard LaserJet.

According to Bigelow, "The key to designing digital fonts is to adhere to the principles of readability found in tradi-



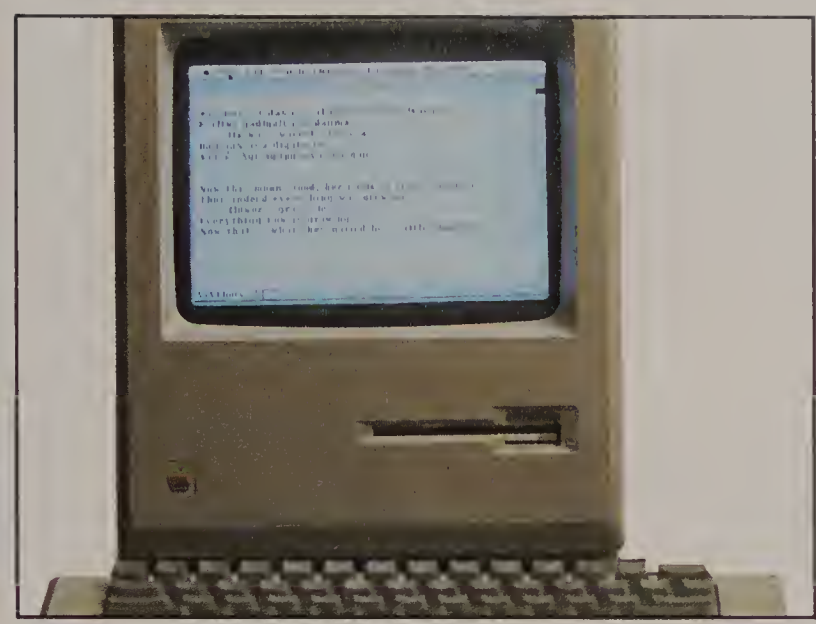
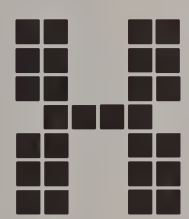
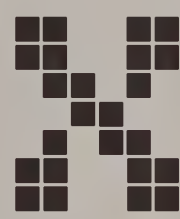


Figure 1
Bigelow and Holmes originally developed the Pellucida typeface for the DEC VAXstation 100 minicomputer to improve the legibility of text on the screen. Now they have adapted the typeface for the Macintosh screen.



This is an example of 12-point Chicago.



This is an example of 12-point bold Pellucida sans serif.

Figure 2
Shape recognition is more crucial than the smoothness of characters. The Chicago x is smooth but doesn't reflect the traditional shape of the letter. The Pellucida x is more jagged but preserves the underlying shape.

This is an example of 12-point Geneva.

This is an example of 12-point bold Geneva.

This is an example of 12-point bold Pellucida sans serif.

Figure 3
In comparison to Geneva, Pellucida maintains contrast between the widths of horizontal and vertical strokes in each letter form.

This is an example of 12-point bold New York.

This is an example of 12-point bold Pellucida.

Figure 4
The subtleties of characters, such as serifs, are difficult to render on a computer. Note how the serifs and letter forms of the New York m, *for example, are less refined than the equivalent character in Pellucida.*

tional typeface designs while tuning the details and features of the design to the digital medium." Bigelow explains that Macintosh fonts are versions of traditional typefaces that were originally designed for typesetting equipment with 1200-plus dots per inch of resolution. But much of what is typed into computers never reaches high-resolution printers, and the quality of such fonts falls short on computer screens, which have much lower resolutions.

The Macintosh screen, for example, has the best resolution of nearly any personal computer but produces only 72 dots per inch. Because of the low screen resolution, fonts are plagued by subtle flaws in characters caused by incomplete reproduction of pixels, spaces between letters that cave in, and slight alterations in consistency and harmony between the height and width of each character. Those problems make reading text on the screen difficult and can even cause eyestrain.

Bigelow notes that the tendency has been to minimize the stair-stepping effect, or jaggies, of digital typefaces at the expense of altering the underlying shape of the characters (see Figure 2). "With that approach, you end up with a face that doesn't follow the traditional design principles because, based on studies of the human visual system, shape recognition is more crucial for readability than eliminating the jaggies," Bigelow says.

Dan Mills uses a font editing program to convert typeface designs for computers.

Another characteristic of traditional typefaces is contrast within characters, meaning the vertical strokes are thicker than the horizontal strokes. Geneva, for example, is a simple sans serif typeface, and the underlying shape of the characters is clear. However, Geneva lacks contrast; every character in 12-point plain text is 1 pixel wide. As a result, Geneva's texture is insubstantial. Text doesn't automatically flow past your eye as do high-quality typefaces that follow established design principles (see Figure 3). Pellucida, on the other hand, preserves the contrast found in traditional typefaces. Pellucida in 12-point is 2 pixels wide vertically and 1 pixel wide horizontally.

Pellucida also has simple serifs, but its designers didn't attempt to render the more delicate wedge-shaped serif of an analog typeface like Times Roman (see Figure 4). New York, on the other hand, looks too much like a traditional serif typeface. Because the digital medium makes it difficult to render serifs gracefully, the serifs of New York characters appear somewhat crude.

A New Generation of Typefaces

During the coming years, with expanding information services and networks, vast amounts of information will be passed among screens and distributed as electronic mail. Bigelow predicts that once people are aware that letter designs are not mechanical drawings to be measured, but perceptual symbols to be read, digital type design will be guided by innovation rather than imitation. Certainly, Bigelow and his colleagues will leave their imprint on the new generation of easy-to-read digital typefaces. □

● ● ● ● ● ● ● ● ● ● *Robert Buderi is a reporter for the Time-Life News Service.*

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Miles Computing Entertainment Software. The Promise Fulfilled.

When the Macintosh first came out, everyone looked at it and said, "Wow, wait 'till the gaming wizards get ahold of this baby..." And some of them did. But some of the "quick and dirty" products that have appeared have left some entertainment software for the Mac a little disappointing.

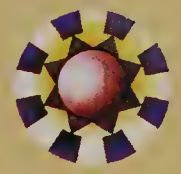
Here at **Miles Computing**, software designers who simply will not put up with second best, or half-baked concepts, have delivered entertainment products of such intensity of effort and such depth that our designers say "Wow, wait 'till people get ahold of *this*..."

MacAttack! was the first, an amazing best-selling programming feat. It's a 3-dimensional tank battle zone simulation where you defend a city in your radar-equipped Sherman Tank. You must survive by out-manuevering conventional and heat-seeking missiles coming from your opponents who can only be eliminated by accurate shooting on your part. Deadly tanks and planes roam about in this unique game with three levels.

Harrier Strike Mission is follow-up to MacAttack! in a tour-de-force of Assembly language utilizing sensational 3-D graphics. This flight combat simulator features the famous Harrier Jump Jet, a fighter aircraft which can maneuver like a helicopter but has all the punch of the latest in modern jet armament. You are pitted against an enemy-occupied island firing heat-seekers, not to mention fighter aircraft in mid-air combat. You must take off from an aircraft carrier, take out the command post and fuel depot on the island and return to your ship. With two skill levels and your choice of day or night mission, mouse or joystick controls, it's the ultimate 3-D flight combat simulator.

Then there's **Fusillade**. You're the last person stuck on Planet Fusill, and must defend a city from power-hungry kamakazee looters in a fast-action shoot-out which escalates at dizzying speed as wave after wave attacks your position in over 30 knuckle-whitening levels. Mouse, keyboard or joystick controlled.

If real trouble is what you're looking for, **MacWars** has it. Miles Computing just can't keep away from 3-D, and this one has a black planet strewn with a deadly obstacle course of surface and sky targets through which you fly your laser cannon-equipped and shielded space ship. On the way to the enemy's planet-sized space station you must survive waves of enemy space paraphernalia, and only your mouse or joystick stand between you and destruction as the waves keep coming, and coming, making things "rather difficult indeed" for you.



For those who want to exercise brain muscles, we have **Overlords**. The object is galactic domination, with power struggles. Struggles against whom? Well, up to *32* players, that's who! Players can be either people or the Macintosh itself, or can even be linked up via Apple Computer's Apple Talk network, the very first game to do this. You can have multiple players on one computer, or link up to other computers, each player with its own strategy and personality. You can use the ships that come with it, over a dozen, or design your own, and by zooming in and out over the Galaxy, set out for high adventure.

Miles Computing Entertainment Software. The Promise Fulfilled.

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MACWARS
MACWARS
FUSILLADE
FUSILLADE
MACATTACK!
MACATTACK!
OVERLORDS
OVERLORDS
GROUND MISSILE ALERT!
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(nothing personal, but . . .)

Better Music Than MusicWorks™

A small list of Deluxe Music's features that MusicWorks™ does not have:

- triplets, quintuplets
- beams, slurs, ties
- 1/32 notes & rests
- 1st & 2nd endings
- alto & tenor clefs
- 8 staffs, 2 tracks per staff
- chords of up to 6 notes in any track
- guitar chord notations
- staccato marks
- crescendo & diminuendo
- dynamics: ppp to fff
- lyrics
- octave raise & lower
- paged scores
- on-screen player piano
- 28 special music symbols (D.C., trill & coda signs)
- easy transpositions
- external speaker command
- note stem direction control
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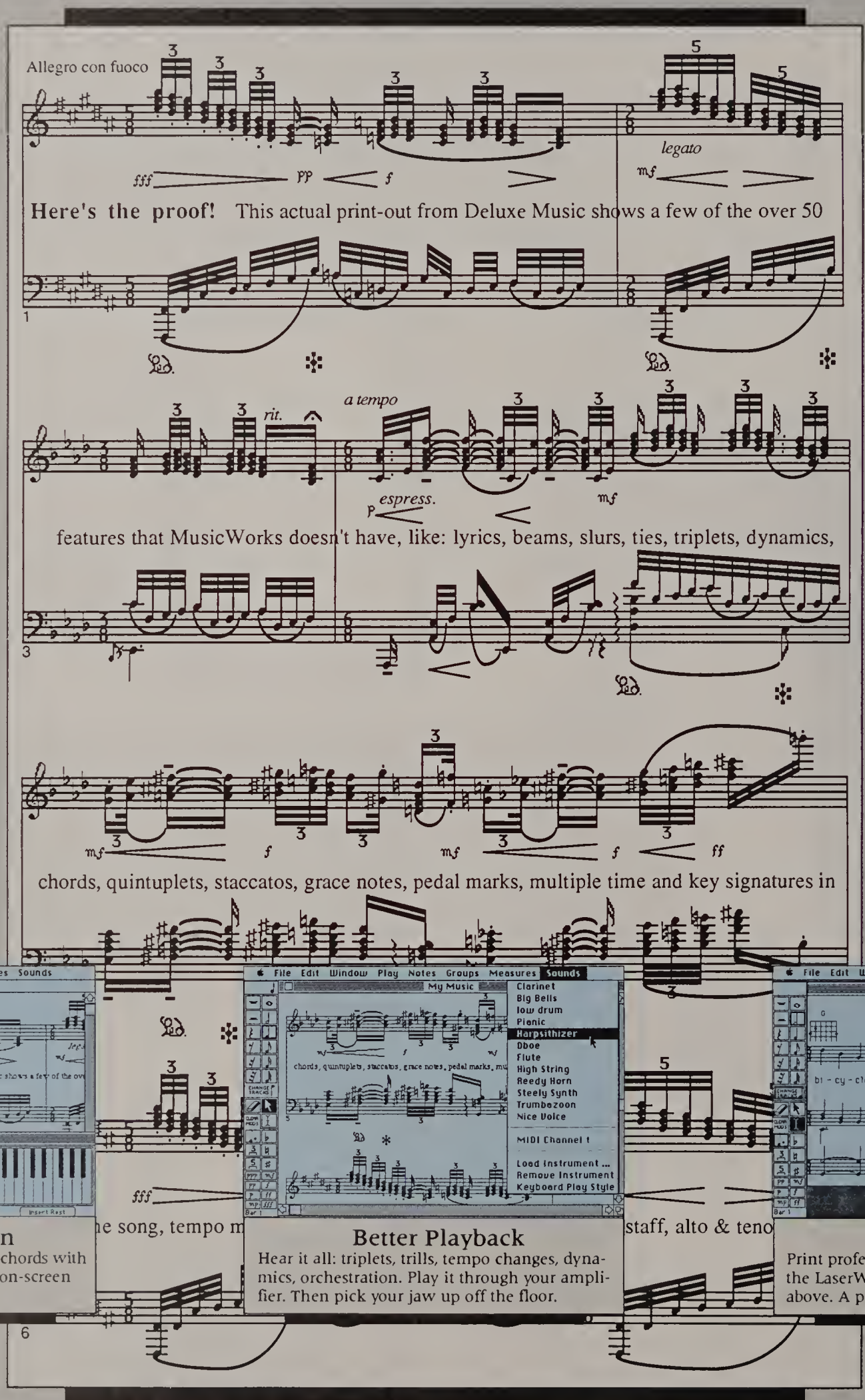

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Macware Reviews

Spiff up MacPaint, explore alien worlds, track your finances, probe your friends' minds, print more efficiently, and add ports to your Mac

Edited by Erfert Nielson

On the Cutting Edge

By itself *MacPaint* is perhaps the Macintosh's most powerful creativity tool. You can use it to draw all types of pictures, from simple sketches to complex wiring diagrams. But the program has its limitations. For example, *MacPaint* won't let you cut, paste, flip, or rotate a picture larger than the drawing window. Now help is here. Many of *MacPaint*'s limitations can be overcome with a *MacPaint* enhancement program called ***Paint Cutter.***

Full-Page Access

Paint Cutter is from *Airborne!* creator Silicon Beach Software. *Paint Cutter*'s claim to fame is letting you work with full-page *MacPaint* documents, cutting and pasting images of up to 8 by 10 inches. The program comes on a disk called *Accessory Pak 1,* which contains a collection of utilities, including MacPaint Rulers, a desk accessory that adds rulers in inches, centimeters, or pixels to the *MacPaint* screen.

You double-click *Paint Cutter*'s icon to start the program and then open the *MacPaint* document you want to edit. When a document is first opened, the screen shows the upper-left section of the picture. You press the space bar to turn the cross-hair pointer into a hand so you can move to any portion of the picture.

Paint Cutter also has a Show Page mode, which you can use to quickly position the working window over an area of the drawing. As in *MacPaint,* the Show Page mode won't allow you to edit a drawing. You have to return to the normal view to get any work done.

To select a section for cutting and pasting, you draw a selection rectangle around the image you want to capture. If part of the selection extends off the screen, *Paint Cutter* automatically scrolls in the direction that you push the mouse.

It Does More Than Cut

When you have selected part of a picture, you can cut or copy it to another *MacPaint* document or any other document that accepts *MacPaint* graphics. You can also rotate the selection in 90-degree increments, flip it horizontally or vertically, or invert the black and white portions (see "The Big Picture"). Another feature I especially like is *Paint Cutter*'s ability to print only the contents of the selection rectangle. You can print the selection—or the entire document—in draft or final mode, with the option of printing at 50 percent reduction.

Paint Cutter works on either a 128K or a 512K Macintosh. If you have a 128K Mac, you can open only one *MacPaint* picture at a time. With a 512K Mac, however, you can open up to four documents and quickly switch between them by choosing the one you want from *Paint Cutter*'s Picture menu. The menu lists all the documents currently open. A check mark on a document name indicates which picture is in view.

(continues on page 132)

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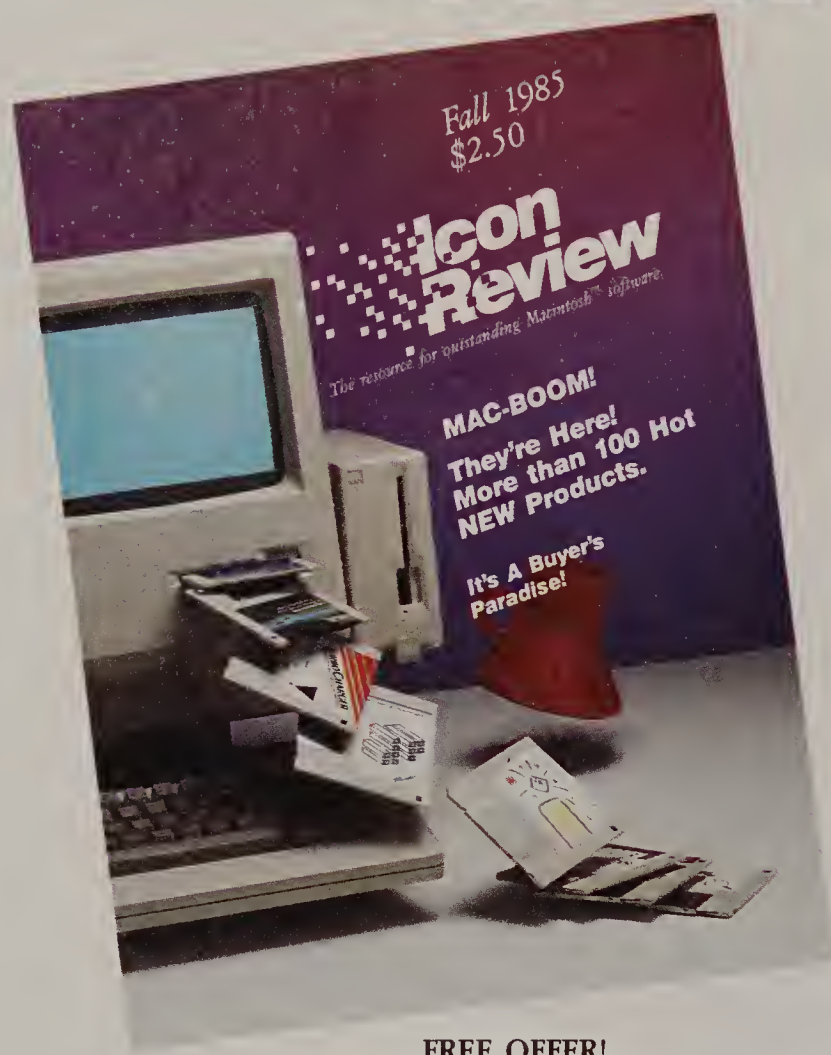

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(continued from page 129)

I discovered that with four pictures open on a 512K Mac, not enough memory is available to cut a half-page picture from one document and paste it into another. *Paint Cutter* gets around the memory limitation by using an unusual copy-and-paste technique. You select the section you want to copy from the original document and choose the destination document from the Picture menu. The selection remains effective as the new document is brought to the screen. You then drag the selection into position in the new document and click outside the selection to paste it in place.

Paint Cutter has other useful features. The program can turn any *MacPaint* document into a startup screen—the initial "Welcome to Macintosh" screen you see when you start the Mac. *Paint Cutter* also has a "coordinates" feature, which displays the location of the pointer in inches, centimeters, or pixels relative to any position you select.

All in all, I found *Paint Cutter* an invaluable tool. No well-stocked *MacPaint* studio should be without it.—*Gordon McComb*

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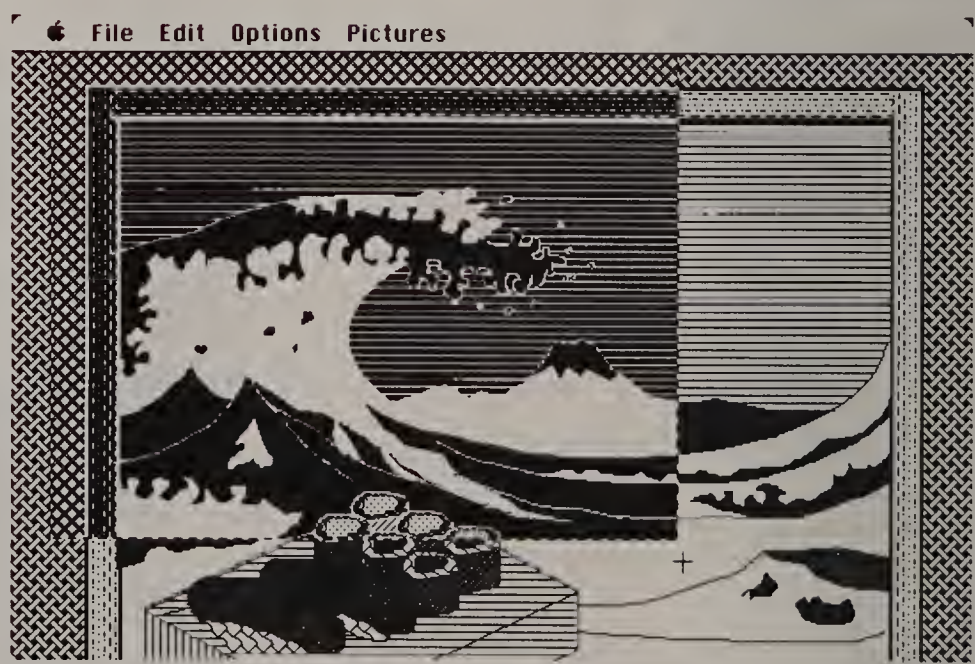

The Big Picture
Paint Cutter *lets you select a portion of a* MacPaint *document as large as 8 by 10 inches. You can flip, rotate, or invert the selected section, as well as copy it to the Clipboard or the Scrapbook.*

My Worlds and Welcome to Them

No computer adventure game has yet offered the carefully directed plot or the skillfully realized characters of a good novel. Even the most creative adventure game designer can't build in literary depth because of attributes inherent in the genre. Programming techniques, for example, require that a game be structured as interconnected "rooms" where players find objects, encounter obstacles, solve puzzles, and meet other characters in the adventure. The result of such a structure is an episodic plot that, appropriately enough, seems boxy and graceless.

Since an adventure game is interactive, it includes a parser, which interprets your commands as you go through the adventure. Yet even the most sophisticated parser cannot be prepared for every possible English language instruction. The parser, therefore, limits interaction in the adventure and restricts the development of characters, who are usually either merely personifications of recurring obstacles or diverting sources of on-screen hints. Pryority Software's ***Gateway*** is no exception, although it has a few interesting characters and a plot that leads to a climactic confrontation. This text and graphics adventure game covers ground familiar to science fiction readers—parallel worlds, ravenous dinosaurs, robot guards, a myste-

rious abandoned city, and an Evil that threatens to dominate the world. *Gateway* is written by a science fiction author, Michael A. Banks, who includes among his credits books about model rocketry and superheroes, as well as dozens of science fiction and detective short stories. Banks's *Gateway* is more like a short story than a novel, but it takes longer to complete than reading either.

Uncle Bert's Legacy

To play the game, you assume the role of a character who inherits an abandoned building in a run-down section of town from an eccentric uncle, Bertrand von Wyk. In an office in the building, you find Uncle Bert's Gateway journal, which tells of fantastic adventures in other worlds, along with a note. In the note, Uncle Bert enjoins you to pass through the Gateway to fight an evil that threatens not only those worlds but your own as well. The adventure starts when you go through the building's link to other dimensions.

Gateway's game screen has a main window that has text or, when available, graphics (see "East to the Armory"). You switch from one to the other by clicking the appropriate button to the right of the window. When the window displays text, a vertical scroll bar allows you to review the narration and your previous commands. The graphics, which were digitized through Thunderware's ThunderScan, illustrate the story rather than move it along. They are not meant to give you clues, although they are drawn well and take advantage of the Macintosh's high resolution. Some of the drawings contain minimal animation, as when a bridge extends itself over some rapids.

(continues on page 134)

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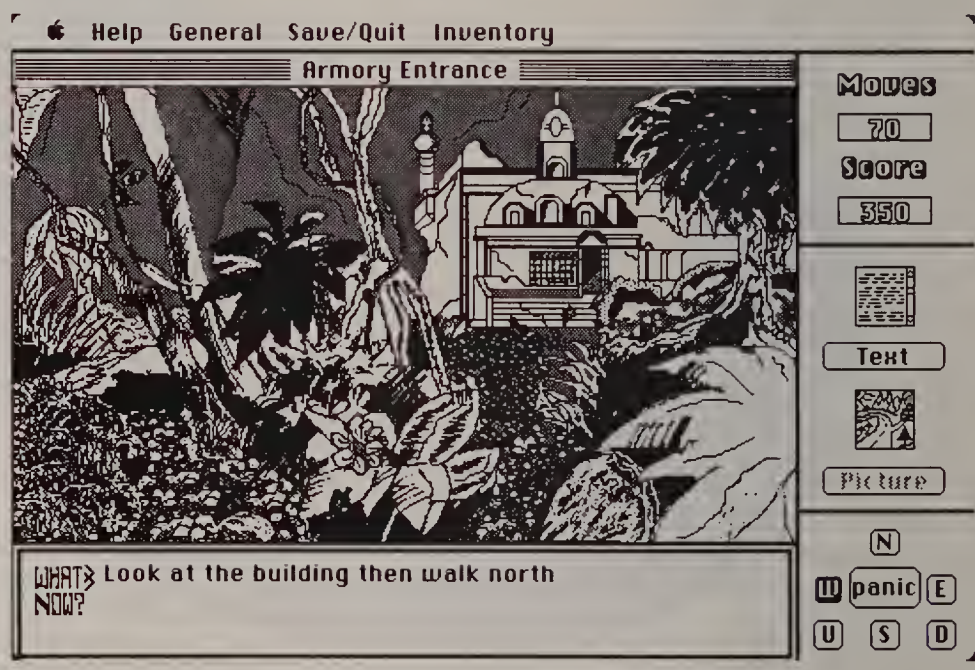
(continued from page 133)

Gateway has pull-down menus for hints, for commonly used commands such as Look and Diagnose, for saving or quitting, and for printing. You can also pull down an inventory of the objects you're carrying. The screen also features boxes for your current score and number of moves and a compass with directional buttons, including up and down. You click the compass instead of typing directional commands. The center of the compass is a panic button, which brings a mock spreadsheet on screen.



East to the Armory
Gateway *has superb digitized graphics on screen in addition to color illustrations that come with the documentation. You switch the window display to a description of the same scene by clicking the Text button.*

Getting Help

Hints come in three flavors: Subtle, Substantial, and The Answer. Although selecting the hint option costs you a point and taking a hint costs even more, the clues provide a valuable and not-too-humiliating way out of those desperate places where you wander in circles forever. Some adept saving and restoring of games can help dodge the penalties. When even The Answer is not the answer you need, you can call Pryority for assistance during normal business hours.

Gateway differs from other text adventure games in that visual clues are found in color illustrations that are included with the documentation. Each picture illustrates a crucial scene in the adventure. The clues do not appear elsewhere and are not mentioned in the on-screen narration. The pictures, of course, are a clever form of copy protection, since you have to buy the game to get them. Photocopying the pictures isn't too helpful because some clues depend on color.

Difficult within Reason

For the most part *Gateway* features typical adventure game puzzles, which involve finding the right objects and using them correctly to overcome various obstacles. When you ask the right questions of certain characters, including a creature in the fifth dimension that is reminiscent of Lewis Carroll's Cheshire cat, you can get information about objects and places. Aside from being amusing, this form of on-screen help is also a form of character development.

Gateway's documentation is worth reading, since it explains how the game responds to commands that it doesn't consider meaningful. With so much help in the manual, veteran computer adventurers who like their puzzles to have arbitrary clues and bizarre twists, as in *Zork* or *The Hitchhiker's Guide to the Galaxy,* may be disappointed by *Gateway.* Its otherworldly obstacles, while complicated, can be overcome with methods that would make sense even in this world. If you don't enjoy having to thumb through a small library of hint books and cheat sheets, then this reasonably difficult game will gratify.—*Rob Swigart*

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(continues on page 136)

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(continued from page 134)

Balancing Act

Could Albert Einstein balance his checkbook? Stories abound of scientists who can construct highly complex mathematical equations but cannot keep their finances straight. If you're a gifted individual who can't balance a checkbook, you may have decided that when things become hopelessly confused, the only solution is to close the checking account and ask the bank to give you what's left.

You can now increase the longevity of a checking account with several programs designed to help you balance your checkbook and let you know where you're spending money. Two of the programs, Intermatrix's ***ChequeBook*** and Haba Systems' ***Haba Check Minder,*** monitor a checking account by adding and subtracting entries, keeping track of what each check pays for, and helping you balance the checkbook at the end of the month.

Why do people have difficulty balancing their checkbooks? They forget to enter checks or deposits, misenter those transactions, or make arithmetic errors. Both programs prevent arithmetic errors, but you still have to enter detailed checking information for the programs to be effective.

ChequeBook

When you open the *ChequeBook* package, a yellow sheet falls out of the documentation warning you that the program disk should be used only as a startup disk. A second disk is required to store data, which means that using *ChequeBook* on a single-drive Macintosh entails a lot of disk swapping. Relatively unambitious programs, such as checkbook managers, should work conveniently on a single-drive system.

To use the program, you first establish up to ten income categories and up to 90 expense categories. You can choose from the program's ten expense categories such as mortgage, utilities, and taxes, or you can replace the categories with your own.

Once you establish income and expense categories, you record information from your checkbook's register in the program's checkbook register. You can enter checks in two ways: in a replica of a blank check or in the program's register. If you

(continues on page 138)

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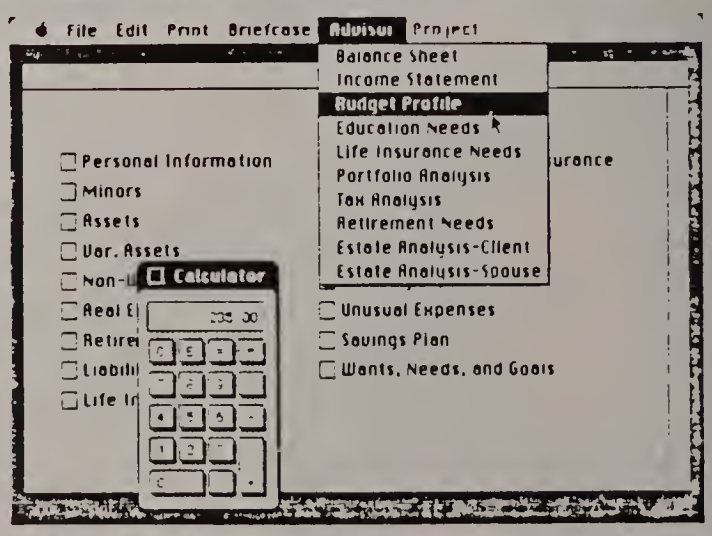

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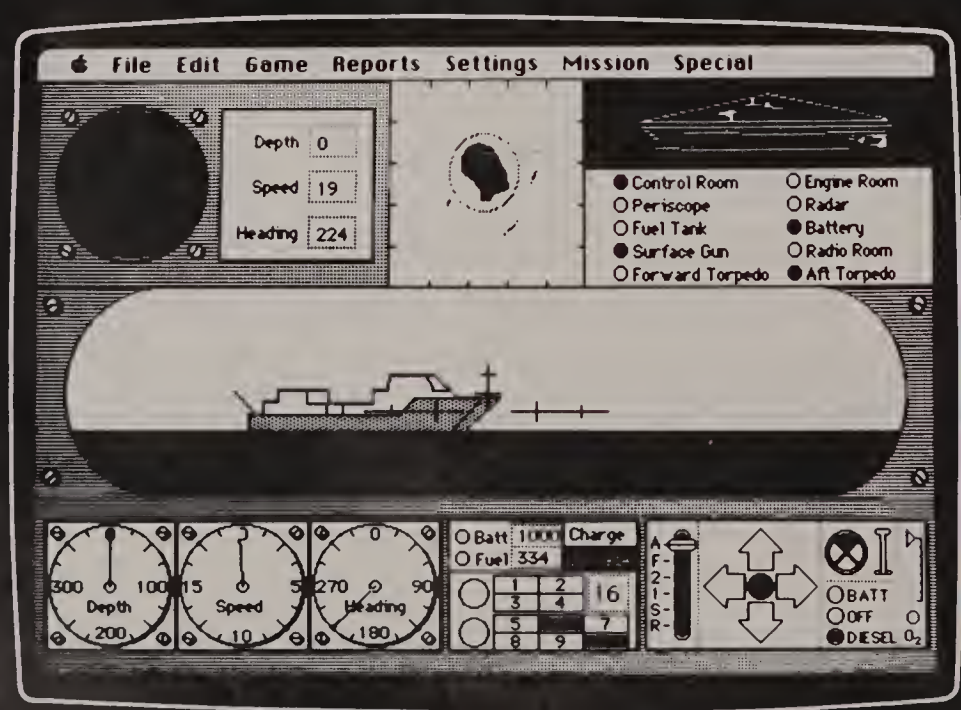

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(continued from page 136)

use the check replica, information is automatically posted to the register when you click a button marked "signed."

During the process of recording checks, people frequently make entry or arithmetic errors. It's important for a checkbook program to minimize such errors, but *Chequebook* falls down when it comes to checking errors. To test the way *ChequeBook* handles entry errors, I duplicated a possible typing error for $1.89 by entering $Q.89. The program interpreted the figure as $.89 and accepted the entry.

Not only does the program fail to check entry errors, it fails to provide a flexible way of entering deposits. After entering a number of checks, I followed the documentation's lead and tried to enter deposits. Unfortunately, the instructions are poorly organized, and only after I entered a month's worth of checks did I discover that I should have been entering deposits when they occurred, just as I do in my own checkbook. The program does not automatically order deposits by date. I had to enter deposits at the bottom of the register and cut and paste the entries to their proper places on the register.

Posting Pirouettes

Most checkbook programs kill two birds with one stone by letting you disburse a check or a deposit to the appropriate expense or income category at the same time as you enter the transaction. *ChequeBook* separates recording and disbursing a check into two operations, effectively doubling your work. You begin posting a check by double-clicking the balance next to that entry on the check register. A dialog box appears in which the check number, amount, and payee are listed.

Each check or deposit can be posted in up to three categories. The dialog box also lists the first three categories on the numerical list of account names. You can choose a category from the list, but most often those categories have little bearing on your transactions, and you have to type the appropriate account's number or name. To view the list of current accounts, you click the Account Names button in the dialog box.

Clicking the button produces a numbered list of accounts. It would make more

(continues on page 144)

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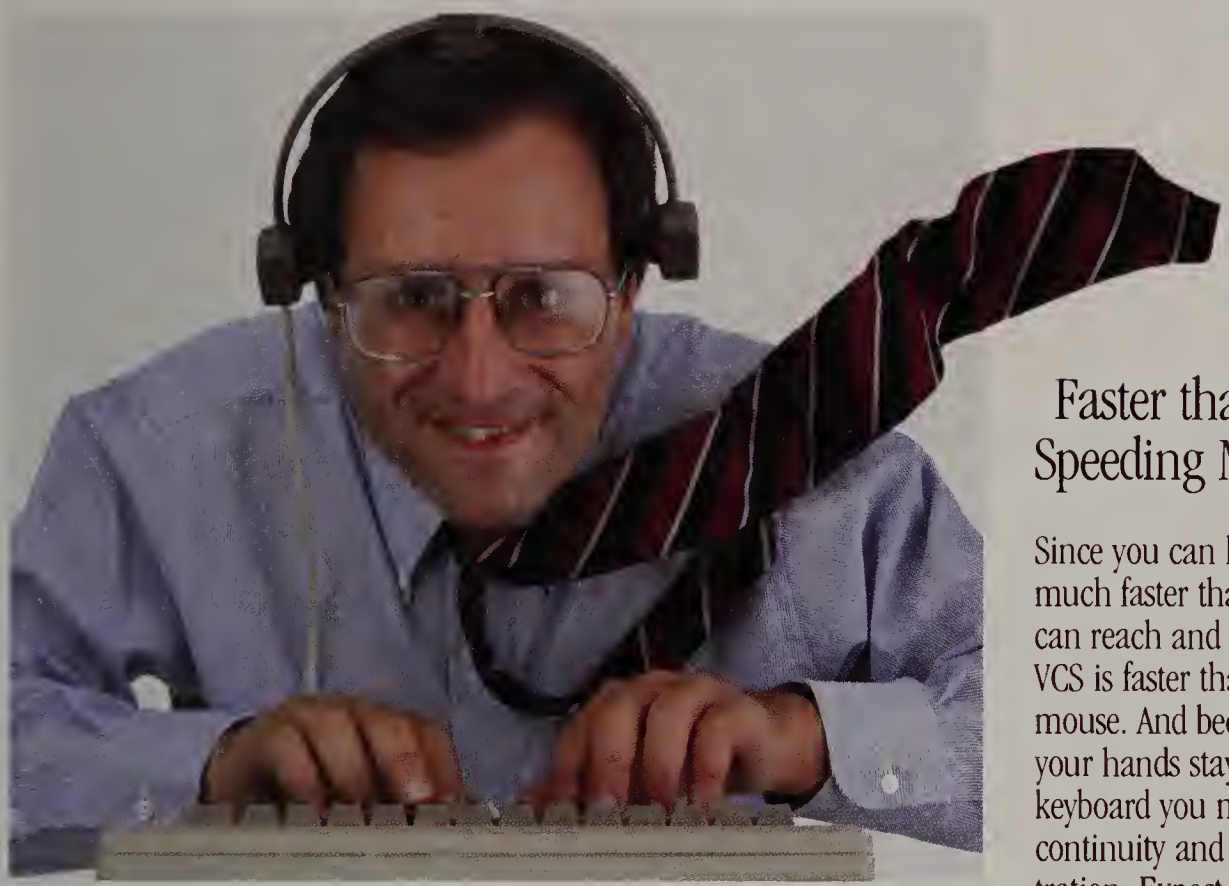

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(continued from page 138)

sense for the program to list accounts alphabetically because you are more likely to remember an account by name than by number. To post a check, you return to the previous screen and type the expense category's number or name. A well-designed program would allow you to post a check automatically by clicking the category.

If you don't indicate a category at all, the program automatically posts the check in a fourth category–WITTB–where it stays unless you remove it. Never heard of WITTB? The term makes even students in Accounting 101 cringe. WITTB is a catch-all category that stands for "what it takes to balance."

In addition to the absence of error checking, the inflexibility of entering deposits in order, and the extra work of posting transactions apart from entering them, *ChequeBook* provides no way to track tax-deductible expenses. Most checkbook programs let you flag deductible expenses as you enter checks so that you can produce an itemized list of all tax-deductible expenses at the end of the year.

Haba Check Minder

A second checkbook program, *Haba Check Minder,* helps you keep your checkbook balanced and see where you spend money by keeping procedures simple and saving extra work. Unlike *ChequeBook,* the program requires no disk swapping. You can keep up to 1000 entries on the program disk and over 2000 on a second data disk.

Check Minder begins with a tabula rasa: you enter the opening balance from your checkbook, and you're ready to begin. Like with *ChequeBook,* you enter transactions on a replica of a check (see "Writing a Check"). Type in the check number, date, payee, and amount. If you want a comment, type it in the space marked "Memo." Unlike *ChequeBook, Check Minder* does not accept a nonnumeric check amount, and the program demands a complete entry before it accepts a check.

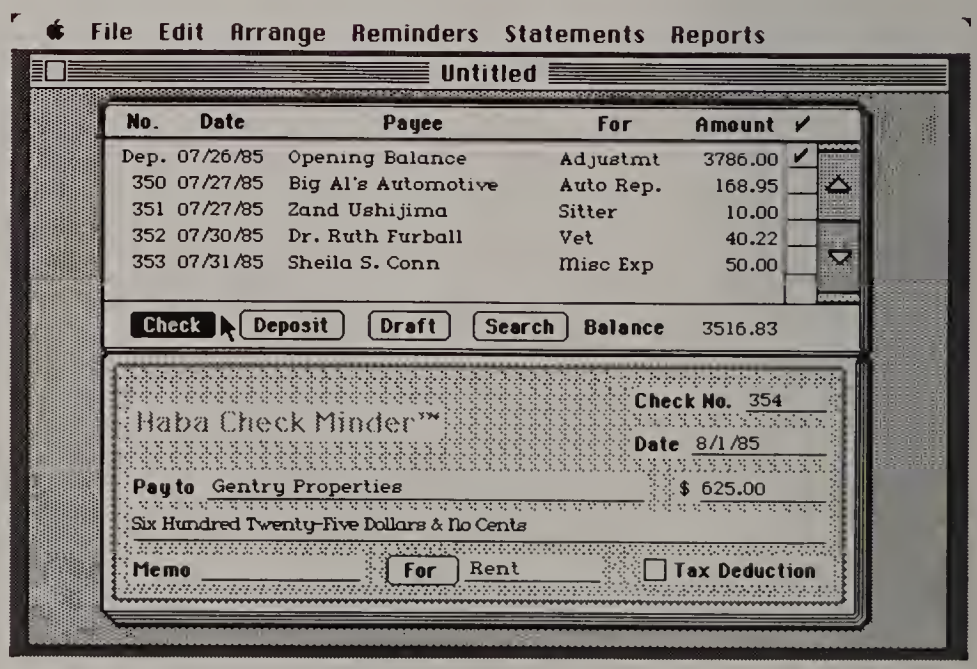
You create expense and income categories as you go along. While you are entering information in the check replica, you move to a space marked "For" and type an expense category, which you can add to a permanent list of categories. Once you introduce a category, you can enter corresponding expenses and then choose the category from an alphabetized list. Click the category, and the amount is posted automatically in that account. Finally, if the expense is tax deductible, click the box marked "Tax Deduction."

Entering deposits is also simple. You do so on a replica of a deposit slip, adding income categories as you go along. Service charges and loan deductions are listed on a third form called a "bank draft." The manual does not tell you how to record cash deductions from the checking account, such as withdrawals from an electronic teller. I had to experiment to discover that an electronic withdrawal should be recorded as a bank draft.

Once and Future Checking

Check Minder lets you examine your finances in detailed or nondetailed reports of income and expenses. You can specify dates for the reports so you can tell how

(continues on page 147)



Writing a Check
You use Haba Check Minder*'s on-screen check to enter a check's number, date, payee, and amount, as well as an expense category and whether an expense is tax deductible.*

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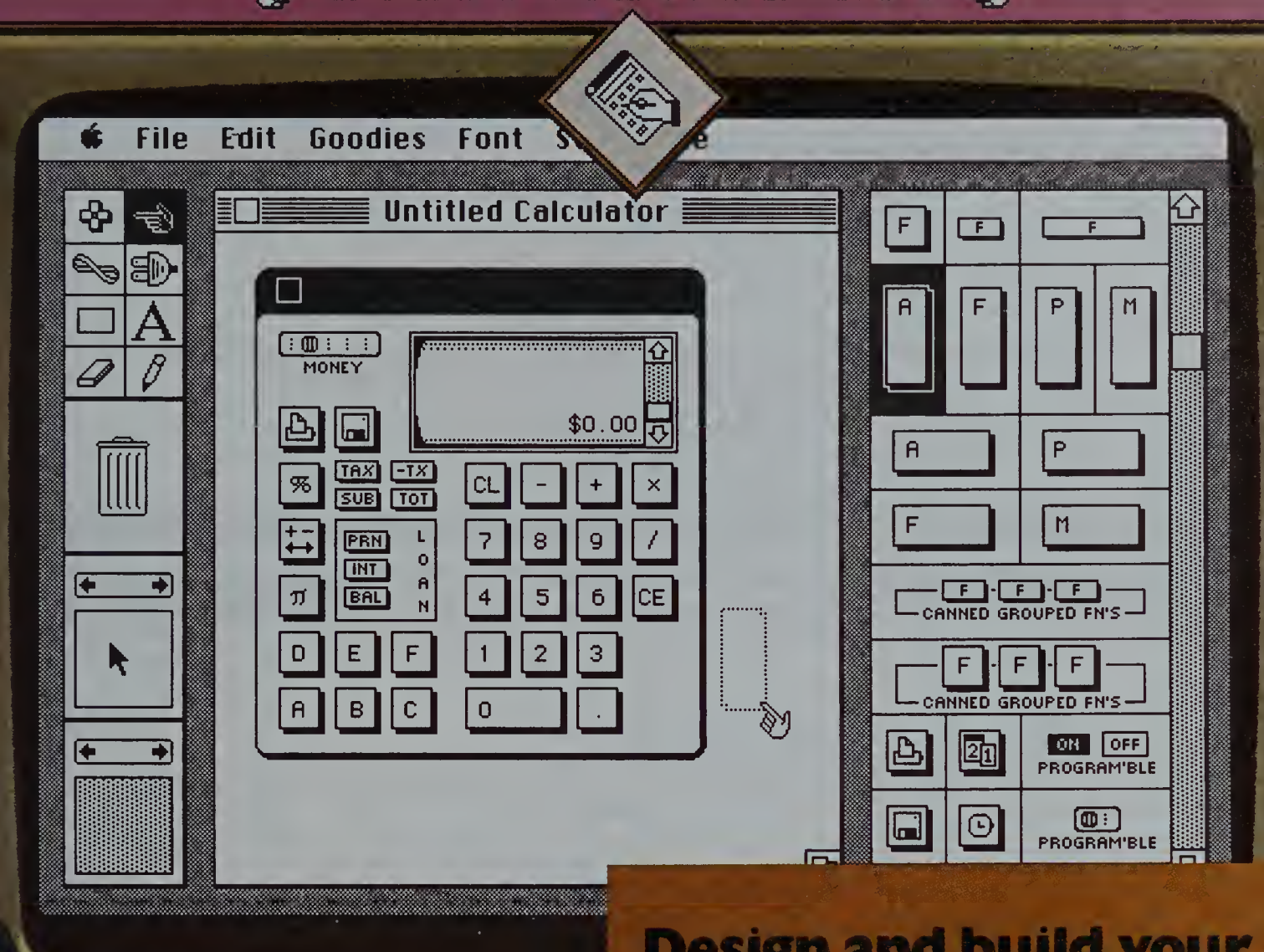

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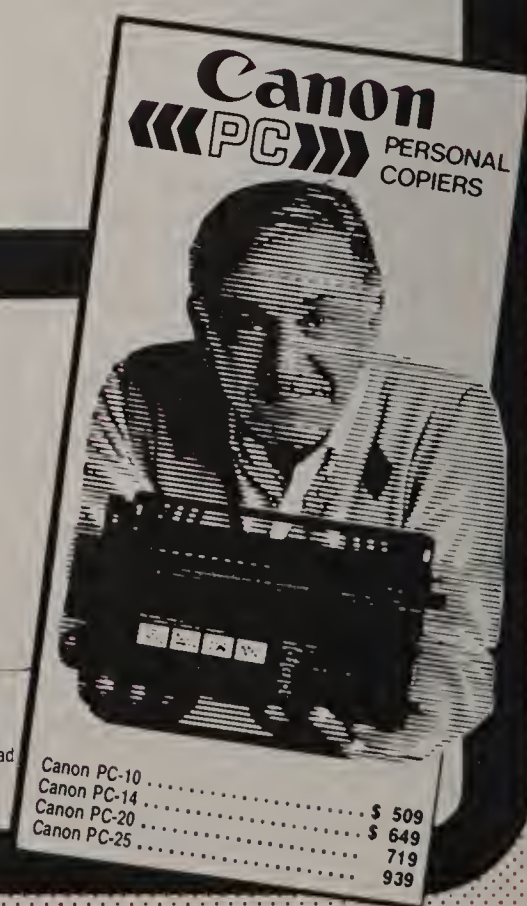

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(continued from page 144)

much money you made and spent in any time period. The program also lets you look beyond your current financial state of affairs to make projections. Based on the data entered to date, *Check Minder* can project your income and expenses for each category on a monthly, daily, or annual basis. You can also create reports that show how many of your expenses were tax deductible.

Haba Check Minder offers several other useful features. You can quickly arrange all transactions by number, date, payee, or category. Thus you can easily find out the date you paid a certain bill or learn how many checks you wrote to the finance company. You can create ticklers so that the program reminds you to pay a bill on a certain date.

Check One

In my mind no contest exists between the two programs. *Haba Check Minder* wins hands down. *ChequeBook* is slow and cumbersome and is missing an important feature—the ability to flag tax-deductible expenditures. *Check Minder* is quick and easy to use, with well thought out features and excellent error handling. You can tailor *Check Minder* to suit your needs, and you won't spend much time entering transactions. As you use the program, you will probably learn a little more about how you spend your money, and come tax time, your financial records will be in better order.—*Saul D. Feldman*

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(continues on page 149)

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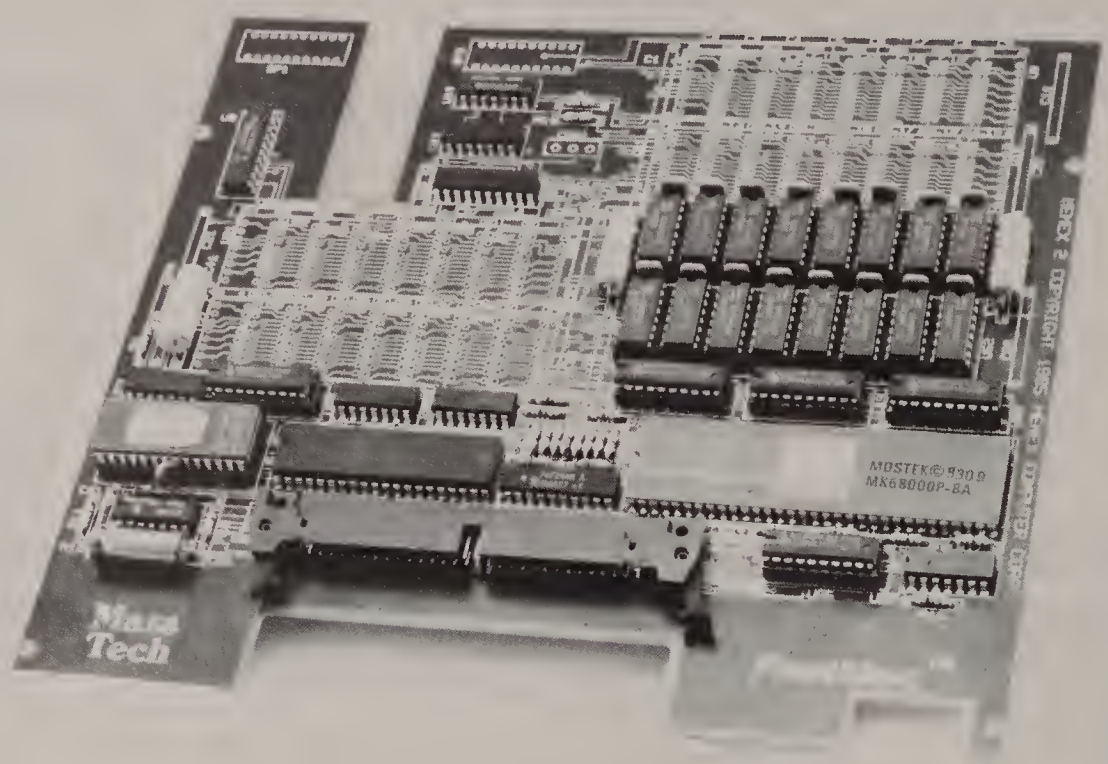

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The FastMac series of memory upgrades is available in **1, 1.5, and 2 megabytes (true linear memory).** With the FastMac upgrade you will be able to quickly and powerfully create and manipulate large files with programs such as Jazz, Excel, Crunch, Word, Helix, Multiplan, Switcher, etc. Each FastMac upgrade comes with a free electronic disk program which will create itself when the Macintosh is powered on and move your favorite applications to it automatically.

ROM Enhancement:
The FastMac upgrade includes the necessary ROM enhancement to run software such as Jazz, Excel, Switcher, etc.

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In addition to adding memory, the FastMac upgrade increases CPU performance because of its high performance memory interface design.

MacFan:™
Many Macintosh users are concerned about the running temperature of the machine. MassTech offers a cool solution called MacFan. A MacFan is provided with each FastMac upgrade. It exhausts heat out the rear vents of the Macintosh. MacFan mounts securely in the inside back cover of the Macintosh and requires no modifications to the Macintosh's cabinet.

MacBus:™
MacBus is a new internal expansion bus which will soon be available on all Fastmac upgrades. This will provide for future expansion of the Macintosh.

Servicing:
Apple servicing can still be provided because the upgrade can be removed as easily as it was installed. All the necessary circuitry for the FastMac upgrade is located on a seperate circuit board and is connected to the Macintosh board with a simple clip-on connector.

Warranty:
The FastMac upgrade has a **warranty of 120 days** from the date of purchase. An extended one-year warranty is also available.

About MassTech:
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Circle 261 on reader service card

(continued from page 147)

Assess for Success

When P. T. Barnum commented on the birthrate of a certain segment of the population, he had no idea that his dictum, along with his name, would one day become part of modern psychological terminology. Nonetheless, the expression *Barnum Effect* is used today to denote a subject's willingness to accept personality test results as true, even though such results may be couched in terms so general as to be almost meaningless.

Experiments show that people tend to have positive attitudes toward personality test results even if the results provide little or no information of any value. Because of the tendency, it is important to be cautious with the "do-it-yourself" variety of personality tests. Even though the results obtained from such tests may be true, they may not tell you much more than you already know.

Mind Prober, from Human Edge Software, requires particularly close scrutiny, especially because its developers claim it is more than a clever parlor game. Indeed, *Mind Prober* is billed as a serious business tool that can help you "read" business associates, employees, and acquaintances, thus putting you in a better position to predict and/or control their behavior. Described on the package as "personality software that lets you see people as they really are," *Mind Prober* comes with a book that is supposed to introduce you to the study of personality and teach you how to read others. As is often the case with this type of product, the anticipation is better than the reality.

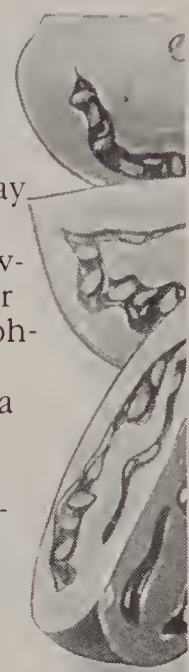
Light Reading

Although thick in physical size, the *Mind Prober* book is thin in content. What promises to be a semischolarly treatise on the practical applications of personality theory turns out to be a repetitive account of the importance of reading others in business and social contexts. Anybody with a freshman course in psychology already knows more than the book provides. Consider, for example, such assertions as "The eyes have been called the windows of the soul," or "Consciously or unconsciously, everyone develops beliefs and expectations about others."

Had *Mind Prober* been billed as a game rather than a program that "will increase your understanding of personal dynamics and will enhance your perceptions of others," much of my criticism would be inappropriate. After all, one wouldn't criticize a flight simulation game simply because it didn't help you get a pilot's license, unless it promised to do so. So while *Mind Prober* would make an excellent game, it still needs to be judged on the basis of what it purports to do.

(continues on page 150)

A defense against cancer can be cooked up in your kitchen.



There is evidence that diet and cancer are related. Some foods may promote cancer, while others may protect you from it.

Foods related to lowering the risk of cancer of the larynx and esophagus all have high amounts of carotene, a form of Vitamin A which is in cantaloupes, peaches, broccoli, spinach, all dark green leafy vegetables, sweet potatoes, carrots, pumpkin, winter squash, and tomatoes, citrus fruits and brussels sprouts.

Foods that may help reduce the risk of gastrointestinal and respiratory tract cancer are cabbage, broccoli, brussels sprouts, kohlrabi, cauliflower.

Fruits, vegetables and whole-grain cereals such as oatmeal, bran and wheat may help lower the risk of colorectal cancer.

Foods high in fats, salt- or nitrite-cured foods such as ham, and fish and types of sausages smoked by traditional methods should be eaten in moderation.

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A good rule of thumb is cut down on fat and don't be fat. Weight reduction may lower cancer risk. Our 12-year study of nearly a million Americans uncovered high cancer risks particularly among people 40% or more overweight.

Now, more than ever, we know you can cook up your own defense against cancer. So eat healthy and be healthy.

No one faces cancer alone.

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(continued from page 149)

Probing Your Subject

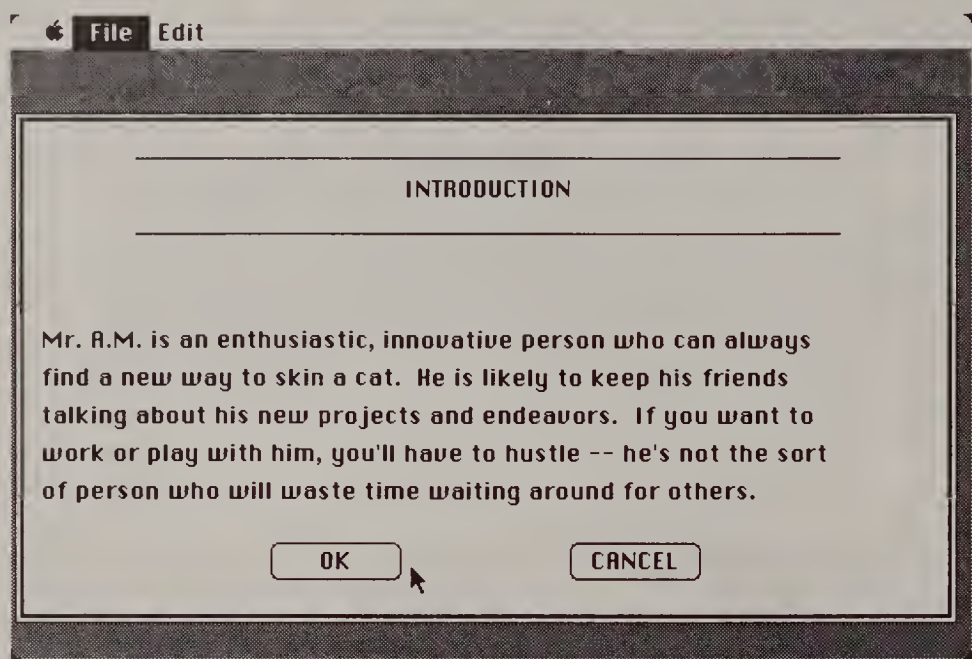
The software is extremely easy to use. Double-clicking the *Mind Prober* icon opens a new file and prompts you to specify the age range and sex of the person you're scrutinizing. Next the program presents you with a list of 79 adjectives, such as *ambitious, apologetic, playful,* and *distant,* and asks you to indicate whether or not each one applies to your subject. When you have clicked all 79 boxes, you generate a report, which you can print or save to disk for future reference (see "Probe Results"). The report covers relationships, attitudes towards work, coping with stress, personal interests, attitudes towards sex (or, if the subject is under 18, attitudes towards school), and "what makes the subject tick."

The first thing you notice about a *Mind Prober* report is that it seems to be remarkably perceptive. In fact, it seems to contain almost as much information about the person you're analyzing as you know. The amount of information should come as no surprise, however, when you realize that what *Mind Prober* does is rearrange the information you give it and put it into a coherent narrative form. *Mind Prober* rarely seems to be off the mark because the report reflects exactly what you know about the subject, no more and no less.

The danger is that someone may be fooled into thinking that the report is an accurate summary of a personality, when in fact the report is nothing more than a summary of what a person using *Mind Prober* knows about someone else. Unfortunately, the book encourages the belief that the report somehow captures a person's "true" personality, even if you have known the person for only 5 minutes. *Mind Prober* is pop psychology at its worst. P. T. Barnum would have been proud.

–Nicholas Lavroff

Probe Results
Mind Prober *translates your impressions of a person into a report. You enter your impressions of that person's personality by clicking a series of boxes.*



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Work While the Imagewriter Plays

Are you tired of staring at the Macintosh wristwatch icon and listening to the hum of the disk drive as you wait for your computer to save a file or finish printing a document? ***MacMate!*** from SMB Development Associates might help reduce the time you spend waiting while the machine works. *MacMate!* allows you to use part of the 512K Mac's random access memory (RAM) as a RAM disk and a print spooler.

A RAM disk works like a regular 3½-inch disk but stores information in the computer's memory rather than on the disk. Therefore, a RAM disk operates at the computer's fast electronic speed, not the slower mechanical speed of a disk drive. A print spooler, sometimes called a print buffer, uses a portion of RAM to hold data sent to the Imagewriter so you can continue working with an application while a document is being printed. The RAM disk and the print spooler can each be set to use up to 320K of RAM, but the two together must not exceed 352K.

The RAM Disk

The *MacMate!* RAM disk, like other RAM disks, promises speed but delivers it conditionally. If you put the System file and an application such as *MacWrite* in the RAM disk, you can instantly change fonts in a document. Given a 512K Macintosh, however, the ability to change fonts quickly seems superfluous because most programs make you wait only the first time you ask for a font. True, you can zip in and out of one application program in a couple of seconds with a RAM disk, but the RAM disk doesn't expedite switching between applications. Even a 320K RAM disk has barely enough room for an application program and the requisite System, Finder, and Imagewriter files.

Speed and memory size considerations aside, a RAM disk can be as useful as an extra disk drive. For example, you can set up a RAM disk with the Finder, the Imagewriter file, and a System file loaded with fonts and desk accessories. Then you can use the internal and external drives to hold 400K each of applications and documents. Unlike other Macintosh RAM disks, however, *MacMate!* doesn't let you set up a RAM disk that is automatically created when you start up the Mac. You must run the *MacMate!* program to set up a RAM disk every time you turn on the machine.

You don't eject the *MacMate!* RAM disk as you do a regular disk. Before you can eject the RAM disk, you must transfer all the files onto a floppy disk because data in a RAM disk disappears when you turn off the Mac. After removing the files, you start *MacMate!* and choose the Dismount command to eject the RAM disk and free the memory. You can avoid having to start *MacMate!* to eject the RAM disk by choosing the Shut Down command, which ejects whatever disks are on the desktop. If you use this method, however, you'll erase any data you haven't saved to disk.

The Print Spooler

The *MacMate!* print spooler gives you the ability to print one document on the Imagewriter while you work on another document. Although the *MacMate!* spooler does not work with the LaserWriter, you can use the spooler with any printer compatible with the Imagewriter. The spooler routes data headed for the Imagewriter to a special holding area, or

(continues on page 152)

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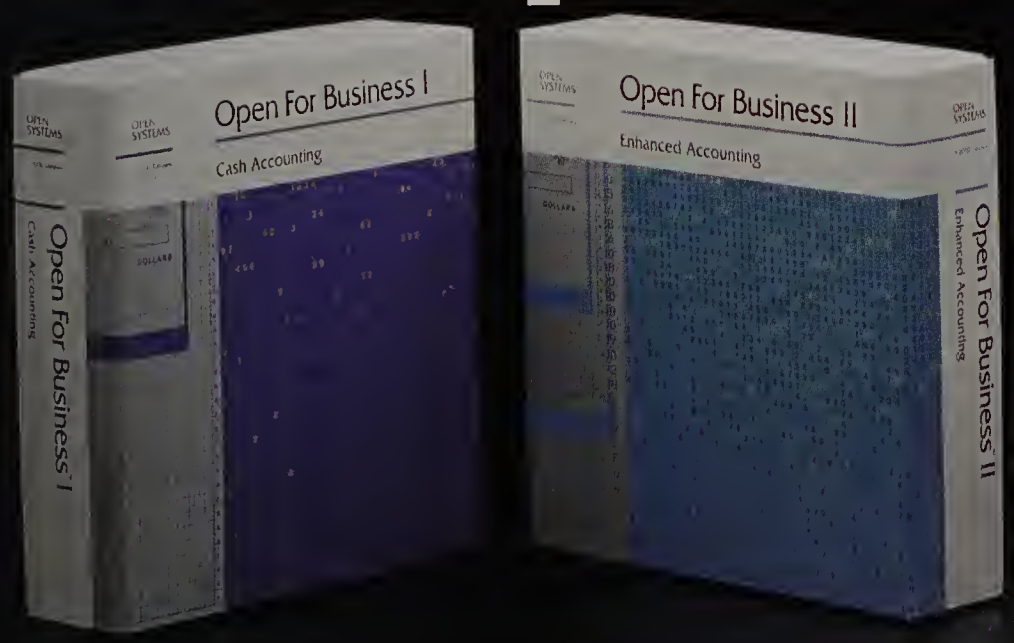

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(continued from page 151)

queue, in memory. The spooler sends information from the queue to the Imagewriter. The queue can hold one document or many, depending on the size of the documents and the capacity of the queue. The larger the queue, the more information the spooler can hold before it fills up and forces the Macintosh to wait.

Once all the information to be printed enters the queue, you regain control of the Mac. In my tests, as the Imagewriter printed documents using the spooler, the performance of the applications I worked with seemed unaffected.

The *MacMate!* documentation lacks guidelines for choosing a spooler size. You learn by doing how the document size and print quality settings affect the spooler's performance. With *MacPaint,* for example, the height and width of a picture, not the number of kilobytes of the document on disk, determine the *MacPaint* file size. I found that a 128K spooler is usually adequate for high-quality printing of a full-page *MacPaint* document. For draft quality, 64K is generally sufficient. By contrast, the size of *MacWrite* documents directly affects the amount of memory needed for spooled printing. Each 32K of spooler memory buys about 45 seconds of high-quality printing, 90 seconds of standard-quality, or 2 minutes of draft-quality.

If you want to stop printing abruptly, you can choose *MacMate!*'s Clear command to empty the queue. Unfortunately, you have to quit the application you are working with to start *MacMate!.* Having the Clear command available as a desk accessory option would make the print spooler less cumbersome. If you want to cancel printing without quitting the current application, turn off the Imagewriter. The spooler continues to send data to the printer, but you won't have to listen to the Imagewriter's clatter, and you won't waste more paper.

After you clear the spooler queue with the Clear command, some information usually remains and appears at the top of the next document you print. Turning the Imagewriter off and then on after clearing the spooler seems to eliminate the residue. To reclaim the memory allocated to the print spooler without turning off the Mac, you start up *MacMate!* and choose the Off command.

(continues on page 154)

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(continued from page 152)

Overview

Since the *MacMate!* program is not copy protected and occupies only 7K, you can easily fit it on almost any application disk. The program works with most Macintosh applications, though not with *ThinkTank 512* version 1.1 nor with the Switcher. Large programs, such as *Excel* or *Jazz,* which require 256K or more of memory, leave room for only a small RAM disk and print spooler.

Like other RAM disk programs, *MacMate!* doesn't significantly enhance the performance of a 512K Macintosh. The *MacMate!* print spooler, on the other hand, gives you an extra few minutes to work while the Imagewriter does its job.–*Lon Poole*

MacMate!
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Many Ports in a Storm

Connecting more than one printer to the Macintosh has always meant juggling cables. Like many Mac owners, I have an Imagewriter and a modem connected to the Mac's two serial ports. When I want to use a letter-quality printer, I have to unplug the Imagewriter and plug in the letter-quality printer, and then reverse the process when I'm done–an inconvenience that could be avoided if I could add a second printer port.

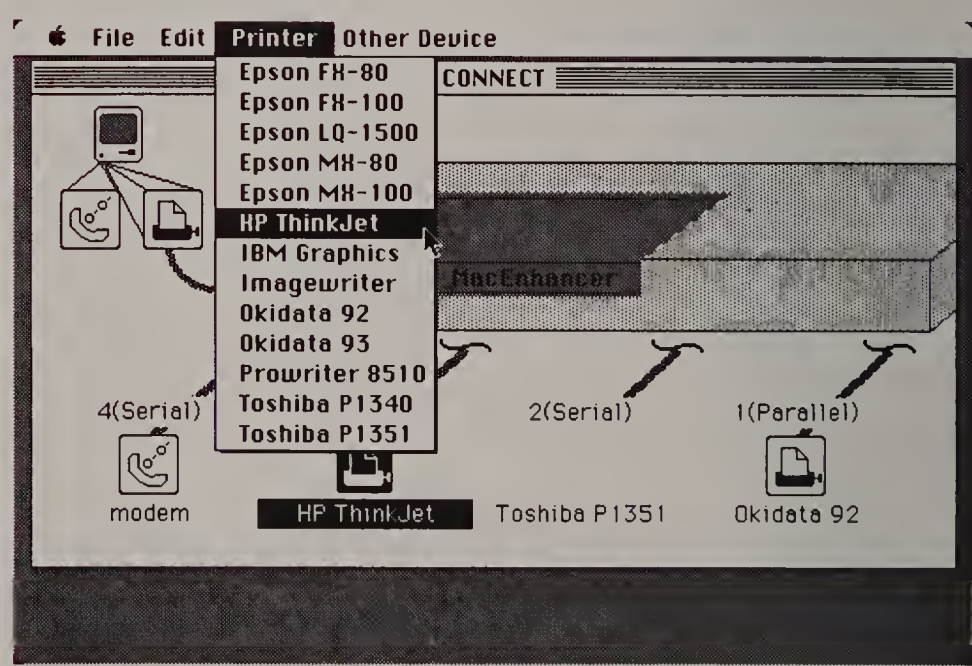
Microsoft's ***MacEnhancer,*** a device that attaches to one of the Macintosh's serial ports, solves the problem of connecting more than one printer to the Mac. It even allows you to connect printers that aren't ordinarily compatible with the Mac.

The MacEnhancer provides an IBM-compatible printer port, two RS-232C serial ports, and an RS-422 Macintosh-style serial port. Since the MacEnhancer takes up one of the Mac's two serial ports, you end up with a net gain of three ports.

Installation

Installing the MacEnhancer is fairly straightforward. First you connect the MacEnhancer to the Macintosh's printer or modem port. Then you install the MacEnhancer software on the application disk.

(continues on page 156)



Configuration
MacEnhancer's software lets you configure a serial or parallel port for a particular device by selecting the device from a menu.

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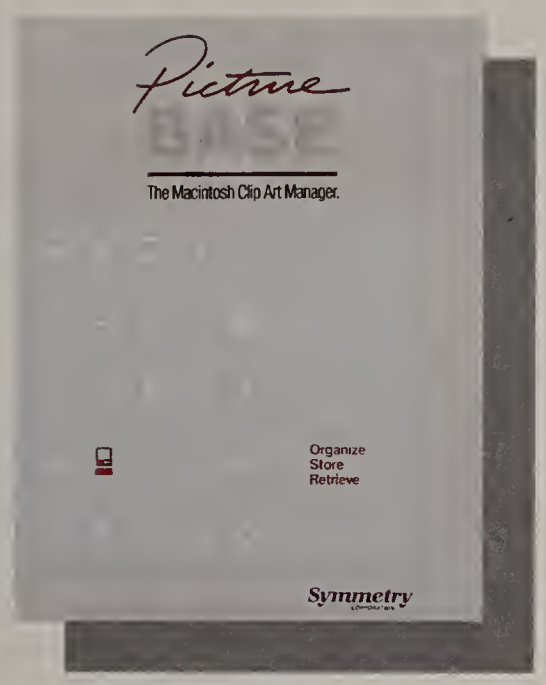

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(continued from page 154)

When you start the program that comes on the MacEnhancer system disk, a picture of the MacEnhancer and its ports appears (see "Configuration"). Configuring a port for a particular printer is a matter of clicking on a port icon and choosing the appropriate printer from the Printer menu. If you're configuring one of the three serial ports, you can also change the baud rate, number of data bits and stop bits, parity, and handshake protocol.

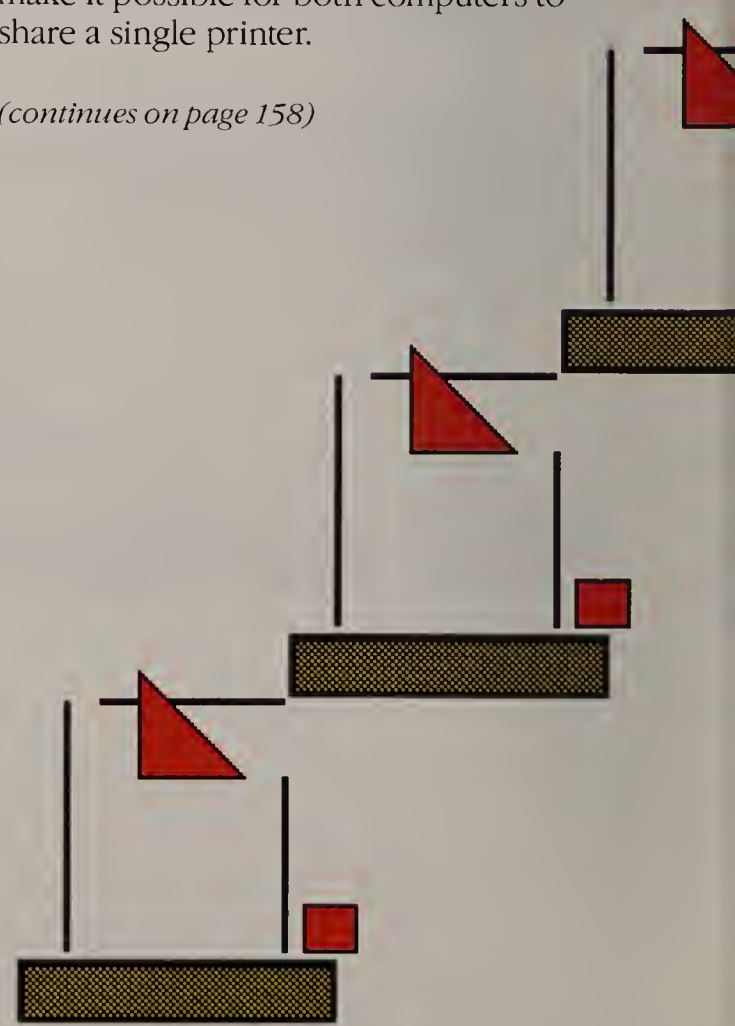
When you finish configuring the ports, you choose Install from the File menu. This transfers an installation program to the application disk along with the driver files for the printers you selected. In order to install the MacEnhancer, your application disks must have at least 23K free.

The third and final installation step is running the newly transferred installation program on your application disk. You can then throw the installation program in the trash, thereby freeing 9K of disk space. Once installed, the MacEnhancer resides on the Mac's desktop as a desk accessory. You can open MacEnhancer from most applications by pulling down the Apple menu. The resulting dialog box lets you switch easily between the installed devices.

PC Printers for the Mac

Perhaps the most useful feature of the MacEnhancer is its IBM PC parallel printer port. If you own an IBM PC in addition to a Macintosh, using the MacEnhancer could make it possible for both computers to share a single printer.

(continues on page 158)



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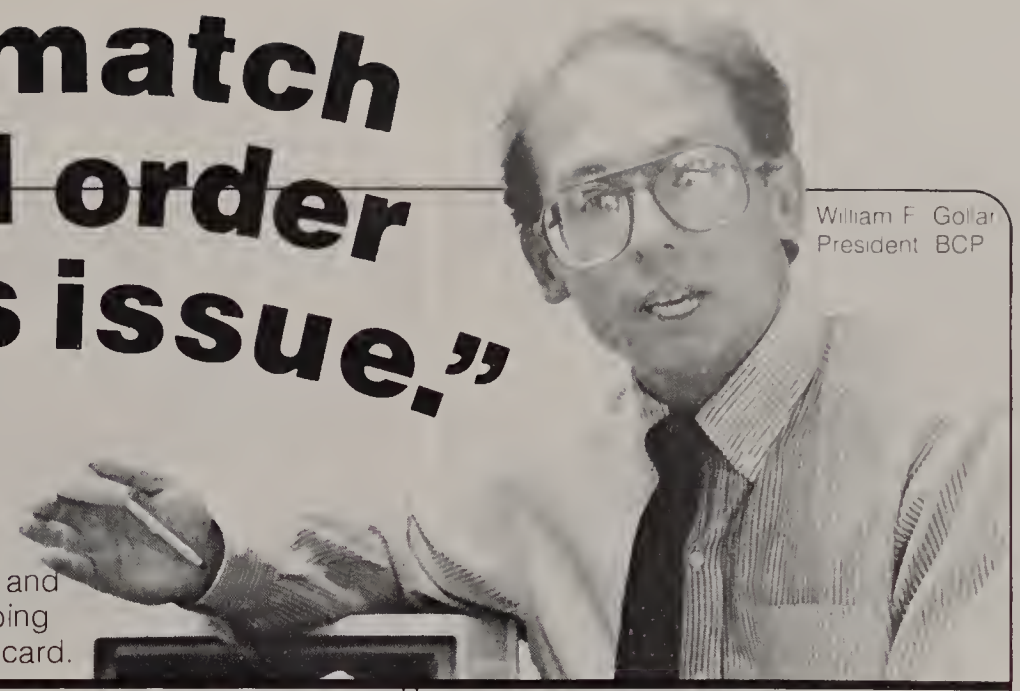

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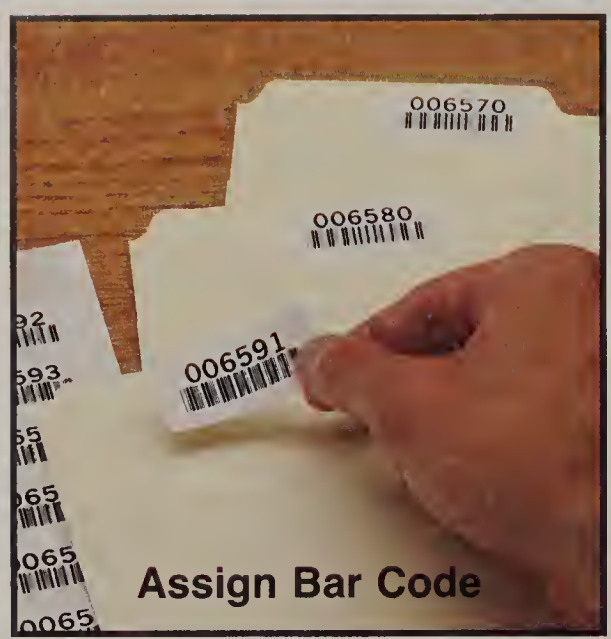

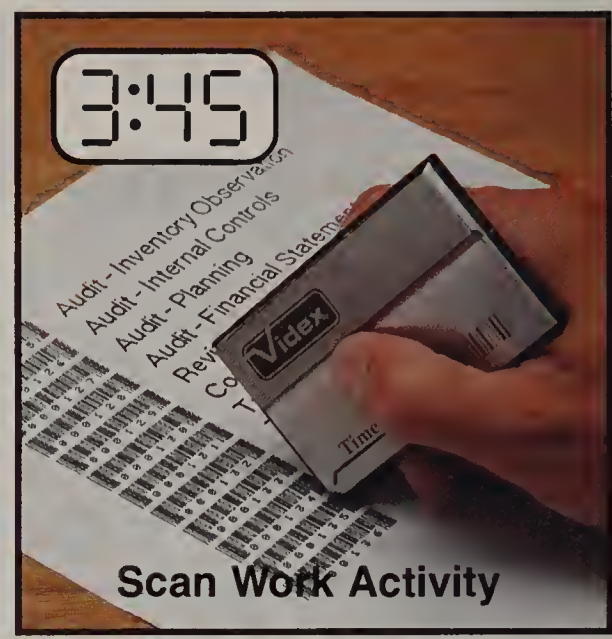

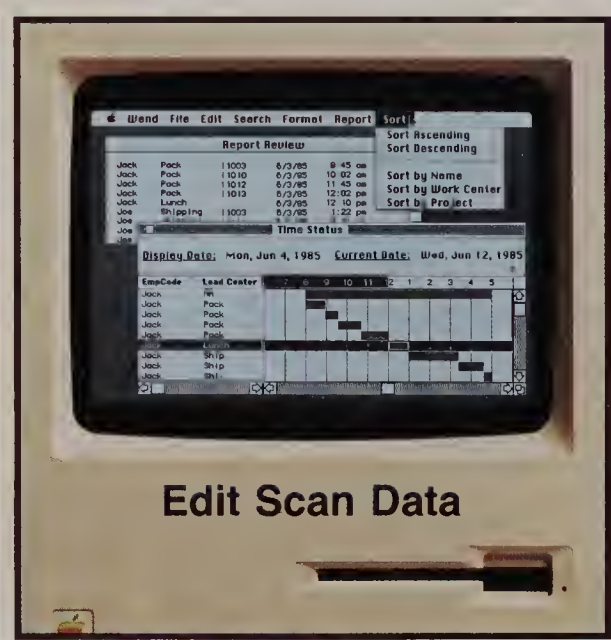

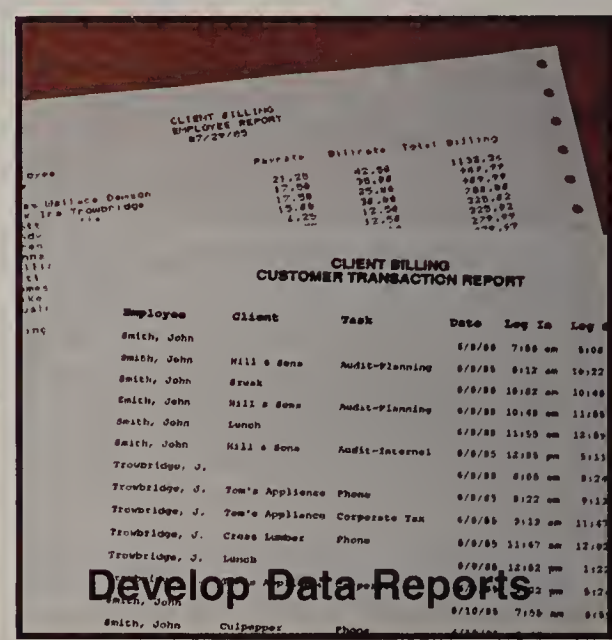

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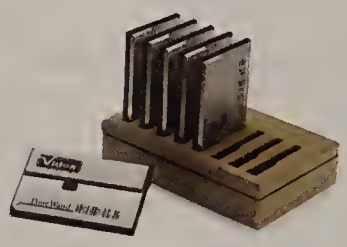

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Circle 383 on reader service card

(continued from page 156)

I tried four IBM PC parallel printers—an Epson MX-100, a Toshiba 1351, a Diablo 630 API, and an Okidata 92—all of which worked fine with the MacEnhancer. You can expect most PC-compatible parallel printers supported by the MacEnhancer to work with the Mac. However, don't be surprised if you run into a few cabling problems. A cable that works with the IBM PC may not work with the MacEnhancer. For example, I had trouble getting an Okidata 92 that worked fine with the PC to run with the MacEnhancer. A missing wire in the cable turned out to be the culprit.

Mixing Printers

The printers the MacEnhancer lets you use range from dot matrix printers like the Epson MX-80 to ink jet printers like the Hewlett-Packard ThinkJet to high-resolution dot matrix printers like the Toshiba P1351.

If you look at the Printer menu of the MacEnhancer configuration program, you'll notice that daisy wheel printers are not included. Unfortunately, you can use a daisy wheel printer only with programs that already contain a daisy wheel printer driver. For instance, you can't print on a daisy wheel printer with *MacWrite,* but you can with *Microsoft Word.*

Communications

Printers aren't the only devices the MacEnhancer supports. You can also use the MacEnhancer to connect modems to the Mac. If you want to use a modem that transfers information at faster than 300 bits per second, you need to attach the MacEnhancer to the modem port. You attach the modem to the MacEnhancer's RS-422 port if you're using an Apple modem or to one of the RS-232C ports if you're using an RS-232C modem like the Hayes Smartmodem 1200. In general, it's easier to connect the modem directly to the modem port and use the MacEnhancer to switch between printers.

One of the two disks that come with MacEnhancer contains a terminal program that is a slightly modified version of Apple's *MacTerminal.* The major difference is that the Microsoft version works only with a modem that is connected to the MacEnhancer. A Microsoft spokesperson says that the next version of the MacEnhancer software will allow you to connect AppleTalk to the MacEnhancer's Macintosh-style serial port. For now you have to connect AppleTalk directly to the Mac's printer port and install the MacEnhancer on the modem port.

Is It for You?

Once an application disk includes the MacEnhancer software, you can easily select among a number of devices. Four light-emitting diodes on top of the MacEnhancer indicate which port is selected. You change ports by choosing MacEnhancer from the Apple menu. When the dialog box appears, you click the button next to the device you want to select.

At first glance MacEnhancer looks like an easy way to use a number of printers with the Mac. But how many printers do you really need? Most people probably need two at most: a dot matrix printer capable of reproducing the Macintosh's graphics and a letter-quality printer for business correspondence. Attached to only two printers, the MacEnhancer is an expensive alternative to plugging and unplugging cables.

The MacEnhancer does provide printer drivers for a number of the most popular dot matrix printers. It also saves you from having to make or buy your own printer cables. The MacEnhancer's biggest asset is the IBM parallel printer port. If you need to use the Macintosh with a printer that has an IBM parallel printer interface, the MacEnhancer is indispensable.—*David Ushijima* □

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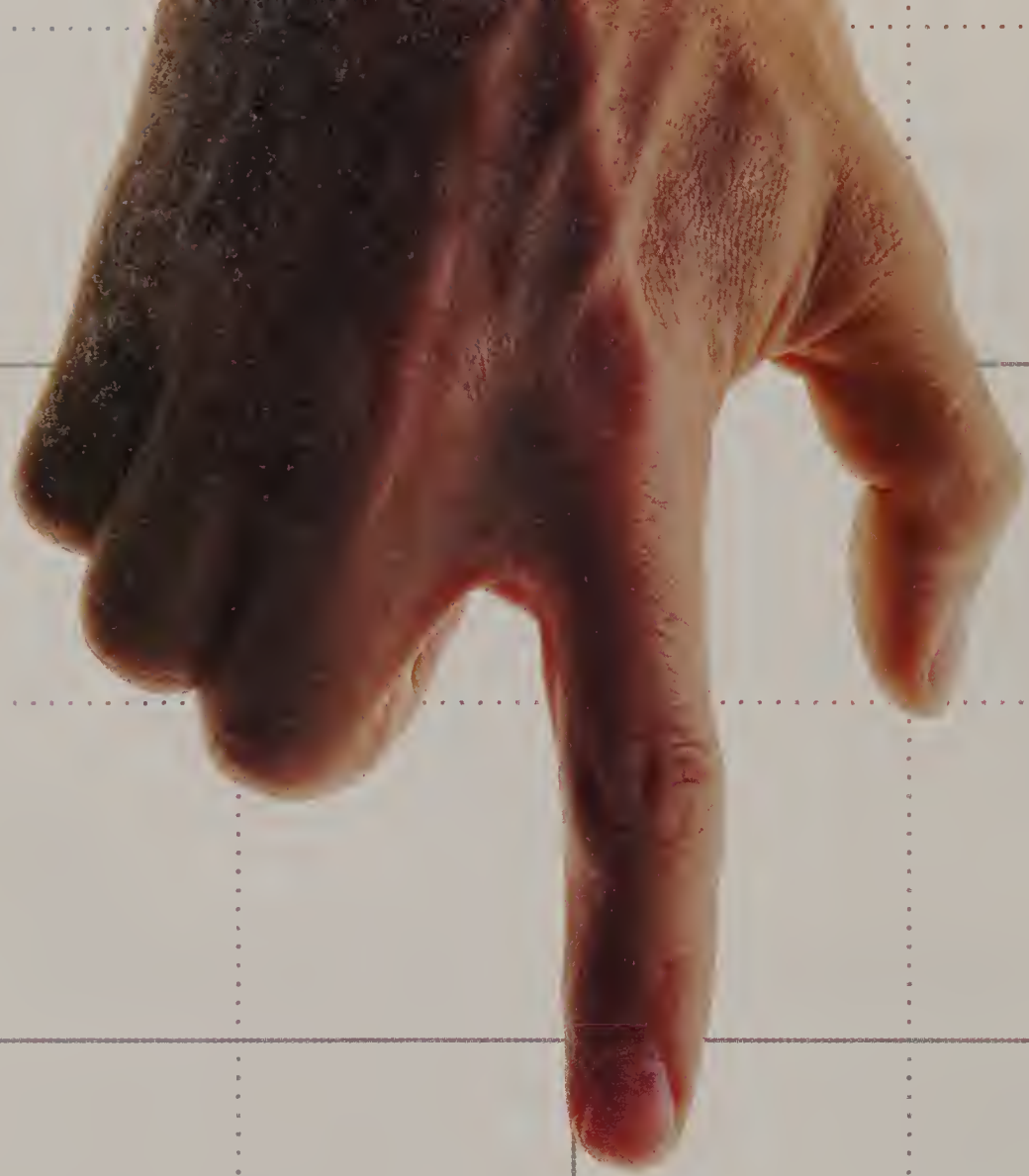

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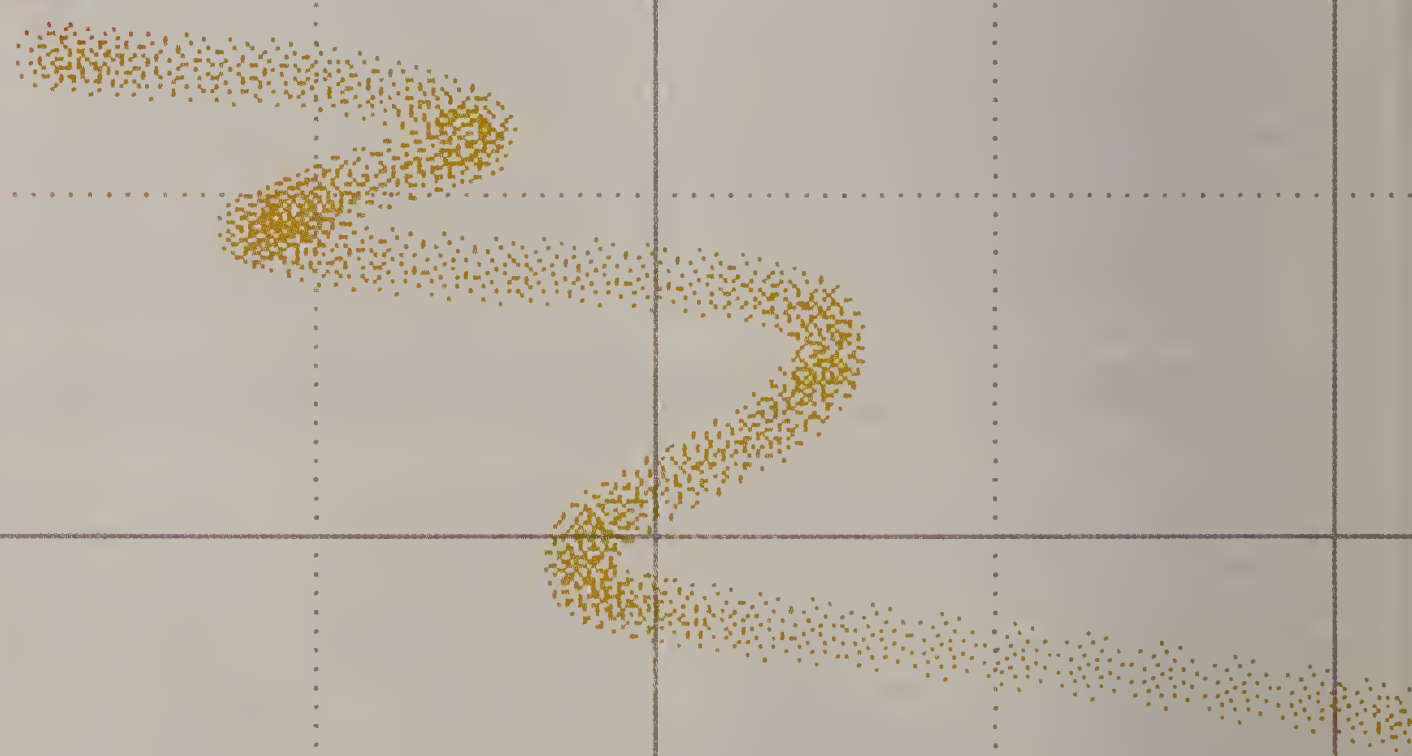

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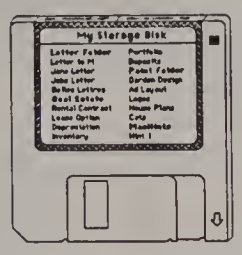

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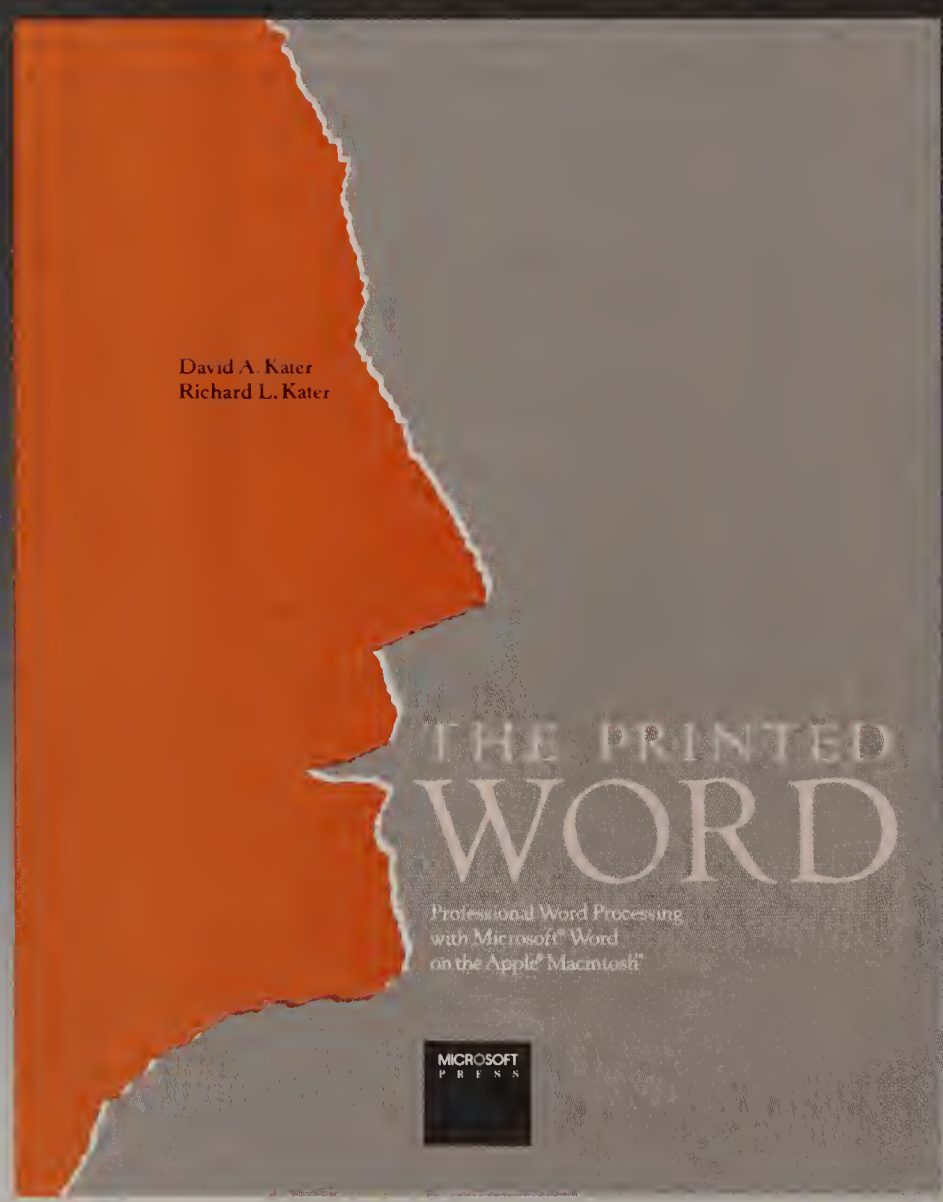

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Circle 375 on reader service card

Open Window

An exchange of Macintosh discoveries

Edited by Jim Heid

Open Window *offers tips to help you use your Macintosh more efficiently. Submitted by readers, industry experts, and the* Macworld *staff, items in this department address all facets of Mac work, from applications to programming routines to capabilities of the Mac and software not covered in the documentation.*

This month's column includes two techniques for rescuing damaged documents, a Microsoft BASIC (MBASIC) program that prints banners on the Imagewriter, and an MBASIC subprogram that determines screen coordinates for buttons, dialog boxes, and windows. We also include a simple technique for creating "screened" images with *MacPaint* and a time-saving trick for making *MacWrite* ruler changes. Finally, we present an ingenious method of using multiple MiniFinders to overcome the MiniFinder's 12-icon limit and to help organize applications on a hard disk.

First, however, a plea to programmers: nearly all of the programming tips we receive are in MBASIC. We encourage C, MacForth, MacPascal, and Neon programmers who have developed a slick routine or found insights into their favorite language to share them with other programmers.

Microsoft BASIC to the Rescue

The message "This document can't be opened" often indicates that a *MacWrite* document has been damaged. The Microsoft BASIC program shown in "Document Rescue" opens damaged *MacWrite* files and copies their contents to a text file that you can open.

When you run the program, a list of files appears in a file selection box. Select the damaged file and click Open. Next, a dialog box asks you to name the rescued file. Type a new name and press Return. The program opens the damaged file, copies it to the new file, and then redisplays the file selection box. To stop the program, click Cancel in the file selection box.

To open the rescued file, start *MacWrite,* close the untitled document, choose Open from the File menu, and double-click on the rescued file's name. The rescued file contains special characters that represent *MacWrite*'s text-formatting codes, and

(continues on page 164)

```
REM  Document Rescue
REM  Original program by Walt Lickteig. Modifications by Jim Heid

WINDOW CLOSE 1
LET Quote$ = CHR$(34)
LET Type.of.File$ = "WORDWDBNJWPDTEXT"   ' MacWrite, Word, Jazz, other
LET Chicago = 0

REM  Get name of old file and name for rescue file
Old.File$=FILES$(1,Type.of.File$)
IF Old.File$="" THEN END   ' CANCEL clicked; return to BASIC
New.File$ = FILES$(0,"Save the rescued text as")
IF New.File$ = "" THEN END   ' CANCEL clicked; return to BASIC

OPEN Old.File$ FOR INPUT AS #1
OPEN New.File$ FOR OUTPUT AS #2

WINDOW 1,"",(75,60)-(375,120),2
WHILE NOT EOF (1)
  LINE INPUT #1, A.Line$
  TEXTFONT Chicago
  CALL MOVETO(90,30) : PRINT "Reading " ; LOC(1)
  PRINT #2, Quote$ ; A.Line$ ; Quote$
  CALL MOVETO(90,30) : PRINT "Writing " ; LOC(2)
WEND
CLS
CALL MOVETO(90,30)
PRINT "File rescued."
FOR Delay = 1 TO 2500
NEXT Delay
WINDOW CLOSE 1
CLOSE #2
CLOSE #1
RUN   ' start over
```

Document Rescue
This MBASIC program opens damaged MacWrite, Word, *or* Jazz *word processing documents and copies their contents to a text file.*

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(continued from page 163)

quotation marks (") appear at the beginning and end of paragraphs. You'll have to delete the special characters and the extra quotation marks, restore the lost formatting information, and save the file again—a bit of effort, but a lot easier than rewriting a 30-page report.

Walt Lickteig
Riverside, California

I altered the original program to make it easier to use and more flexible. The revised listing lets you open not only MacWrite *documents, but* Jazz, Word, *and text-only documents as well. To allow the program to recognize additional types of files, append the appropriate four-character code for the file type to the string variable Type.of.File$ in the program's fifth line. See "Recovering a Damaged Disk" in this issue for more information on rescuing damaged documents.—Ed.*

Disk Editors to the Rescue

When a *MacWrite* document is damaged to the extent that *MacWrite* cannot open it, there is an alternative to the depressing job of retyping the document. The secret involves changing the document's type information—a four-character code that identifies the type of information a document contains. *MacWrite* documents containing rulers and other formatting information are identified by the code WORD. Documents saved as text only have the code TEXT. Often, by changing a document's type from WORD to TEXT, you can trick *MacWrite* into opening the damaged document.

To change a document's type, you need a disk editor program such as *Fedit* or *MacTools*. You can also use Apple's *Set File* application or the Set File desk accessory. If you use *Fedit*, open the document and choose File Finder Attributes from the Display menu. If you're using *MacTools*, select the file and choose InfoEdit from the File menu.

Whichever program you use, you'll see a dialog box resembling the one in "Changing Types." Double-click in the Type box and type TEXT. Finally, make the change by clicking the Change button in *Fedit*, the OK button in *MacTools*, or the Set It button in Set File.

To open the file, start *MacWrite*, close the untitled document, choose Open from the File menu, and double-click on the rescued file's name. Remove the garbage characters from the file and manually restore the lost formatting information, such as rulers or font changes. Finally, save the repaired file using the Save As command.

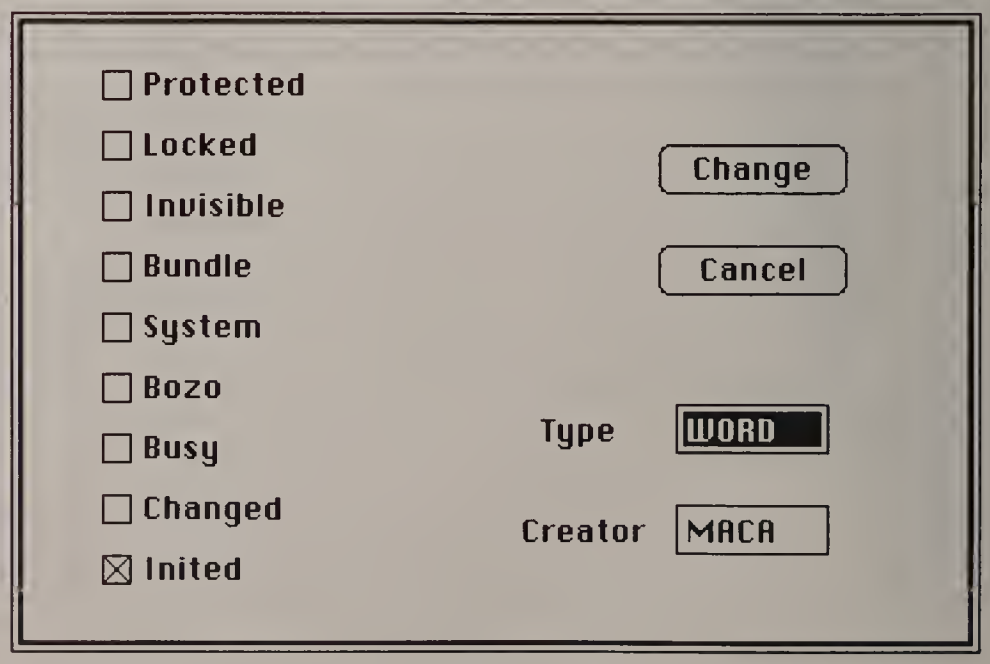
Mitch Foy
Sunnyvale, California

This tip and the document-rescue program take different routes to get to the same place. The document-rescue program reads the damaged file and saves its contents in a new text file, while the disk editor technique changes the original file into a text file. The latter technique is easier because you don't have to type and run the BASIC program. If you don't have a disk editor application, however, the BASIC program does the job.

Disk editors can help Word *users, too.* Word *creates temporary files, named MW0001, MW0002, and so on, as you type and revise a document. If* Word

(continues on page 166)

Changing Types
One way to recover a damaged document is to change it into a text-only document by altering the file's four-character type code with a disk editing application such as Fedit.



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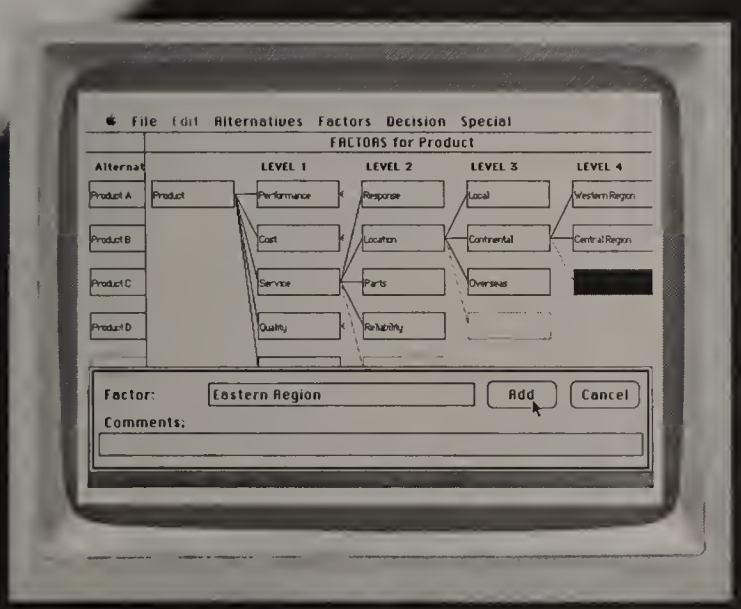
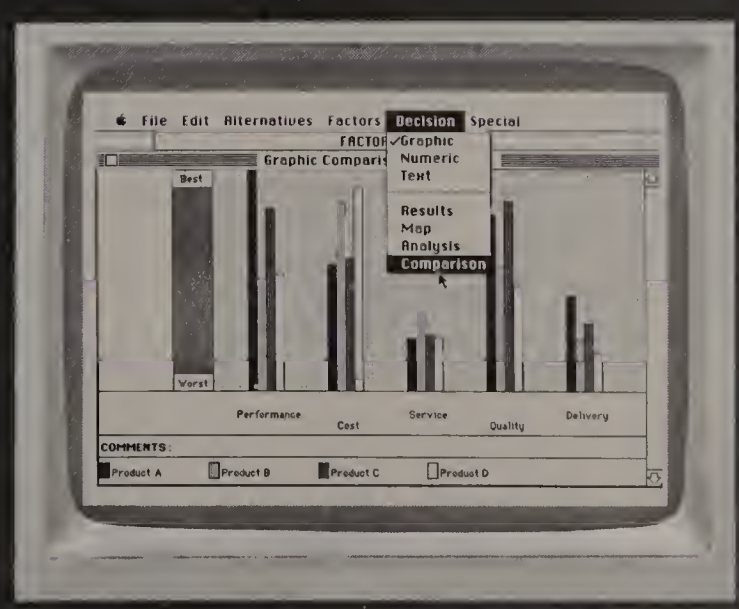


When you're choosing the best alternative, you input the evaluation factors and weight the importance of each.



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(continued from page 164)

crashes during a word processing session, you may be able to rescue some or all of your document by changing the temporary file's type from WTMP to WDBN—a formatted Word *document's type—or TEXT. If you see more than one temporary file on the desktop, use the Get Info command to determine which is the most recent.*

One more thing: disk editors can damage files and disks when used carelessly. If you use the disk editor technique, make a copy of the original damaged file using the Finder's Duplicate command, and work with the duplicate.—Ed.

Banner Maker

I've written a Microsoft BASIC program that makes banners by printing 8-inch text sideways on the Imagewriter (see "Banner Maker"). I've found that the 24-point New York font enlarges best, so make sure the System folder contains the 24-point New York font. Also, close the List window before running the program.

To use *Banner Maker,* make sure your Imagewriter is on and contains continuous-feed paper, then run the program, type the text that you wish to turn into a banner, and press Return. It's great for birthday parties or holidays.

Gerald Keep
Menlo Park, California

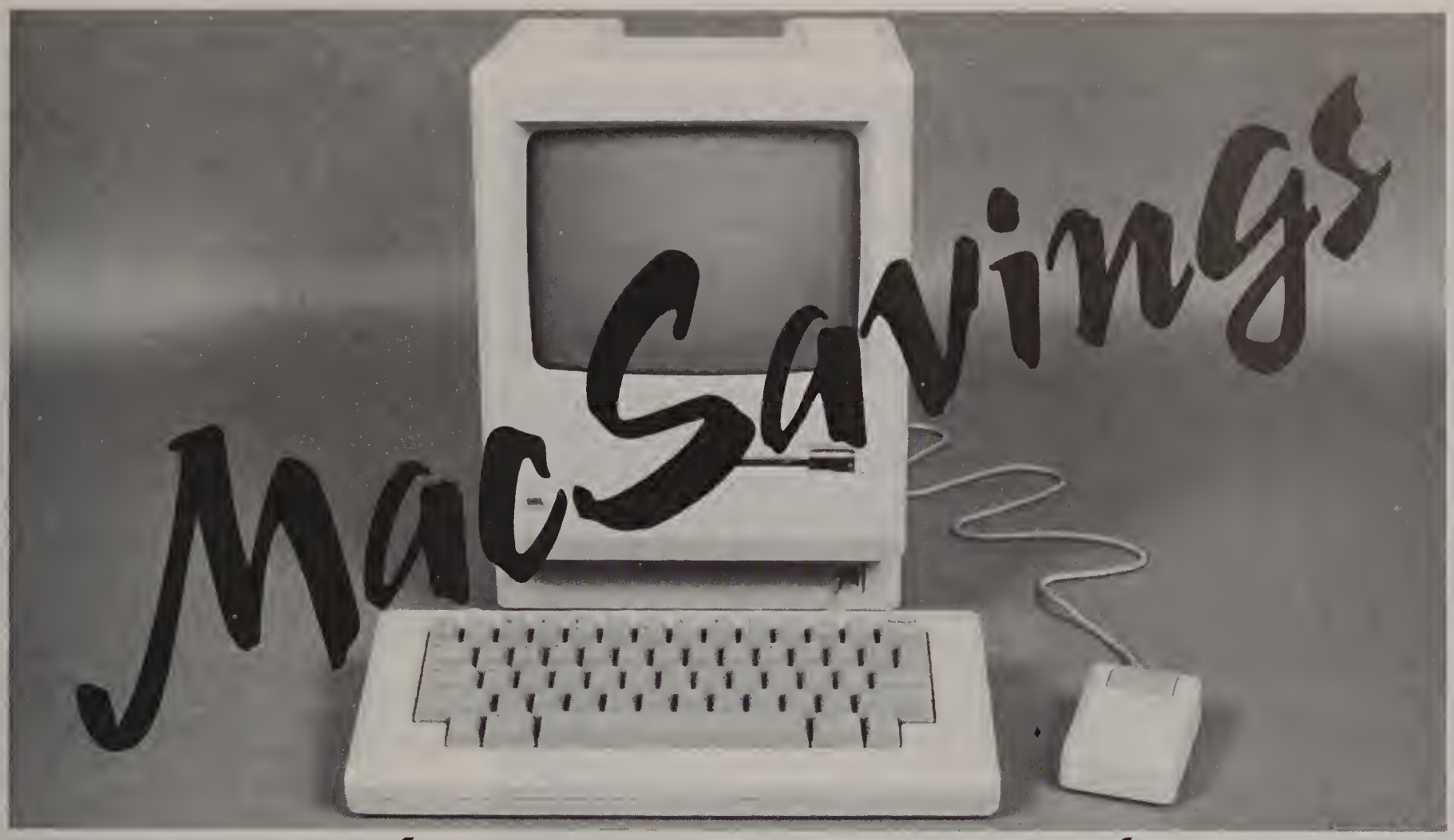
This clever program prints the text on the screen and then places the bits that form the text's image into an array using MBASIC's GET graphics function. Next, the program examines the array elements. If an element equals zero, that portion of the image is white, and the Imagewriter skips four blank spaces. If an element does not equal zero, that portion of the image is black, and four letter Os are printed. Banner Maker *enlarges only one line of on-screen text.*

Fonts other than New York work, too. Perhaps someone will enhance this program with a dialog box or menu that lets you choose the banner font. —Ed.

(continues on page 168)

Banner Maker
This MBASIC program makes banners by printing 8-inch text sideways on the Imagewriter. Before you use the program, make sure the System folder contains 24-point New York. Close BASIC's List window before running the program.

```
REM  Banner Maker.
REM  Original program by Gerald Keep. Modified by Jim Heid.
REM  This program prints a banner on the Imagewriter
REM  The system must contain 24-point New York.
REM  Strangely, this program doesn't work if the List window is open.

DEFINT a-z
DIM pix(20), pen(1)
TEXTSIZE(14)
TEXTFONT(2) ' change this argument to use other fonts
WINDOW 1,,(0,40)-(512,300)

CLS
PRINT"Banner Maker"
PRINT"Make sure the List window is closed."
PRINT"Type the text for the banner:"
INPUT "", text$

TEXTSIZE(24)
TEXTFACE(32)    condensed style for less space between letters
CLS
PRINT text$;
GETPEN(VARPTR(pen(0)))
PRINT

FOR i=0 TO pen(1)
   FOR j=1 TO 2
      FOR c=25 TO 2 STEP -1
         GET (i,c)-(i,c),pix
         IF pix(2)=0 THEN LPRINT STRING$(4,32) ; ELSE LPRINT"0000";
      NEXT c
      LPRINT
   NEXT j
NEXT i

RUN
```



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(continued from page 166)

Screening with MacPaint

In printing, a tint of tiny dots, called a *screen,* is often applied to illustrations and text to set them apart from other elements on a page. I've found an easy way to screen *MacPaint* images:

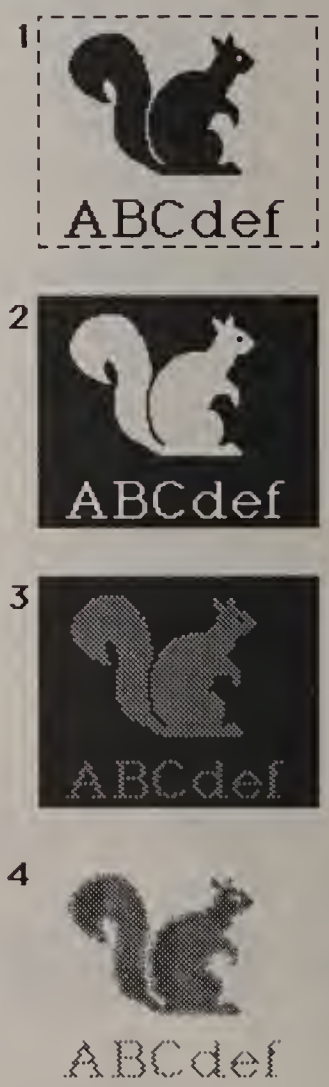
- Enclose the image to be screened in the marquee.
- Choose Invert from the Edit menu.
- Select the desired pattern for the screen by clicking in the pattern palette. The gray patterns give the best results, but other patterns can create interesting effects, too.
- Click on the filled rectangle tool to make it active.
- While holding the ⌘ key, drag a filled rectangle over the inverted image.
- Select the image using the marquee, and then choose Invert from the Edit menu.

"MacPaint Screens" summarizes the steps. The secret behind this technique is holding down the ⌘ key while dragging the filled rectangle. The ⌘ key makes patterns transparent, allowing the image beneath to show through.

Peter Fraterdeus
Evanston, Illinois

(continues on page 170)

MacPaint Screens
To apply a patterned screen to an image, select the image with the marquee (1). Next, choose Invert from the File menu (2). Select the desired pattern and, while holding the ⌘ key, drag a filled rectangle across the inverted image (3). Finally, select the image using the marquee and invert it (4).



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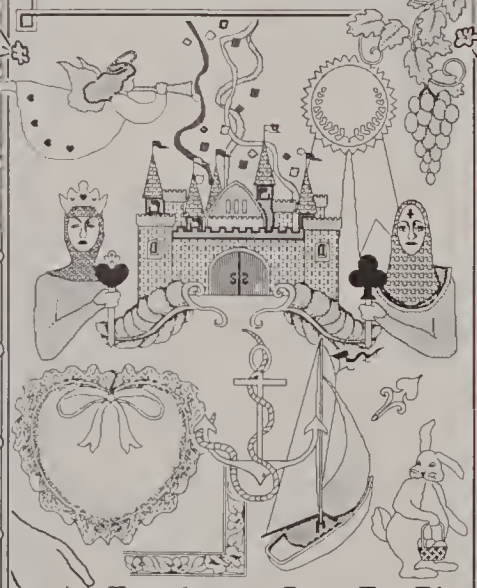

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Circle 324 on reader service card

(continued from page 168)

Locating MBASIC Coordinates

Determining the screen coordinates of buttons, windows, and rectangles in a Microsoft BASIC program is often a matter of trial and error. After spending hours designing a window with many boxes, buttons, and edit fields, I decided there had to be a better way and wrote a routine that would let me experiment with positions and sizes and edit the positioning information into a program (see "Locator").

You can append the Locator subprogram to a program you are developing and call it from the command window. Locator lets you draw in the existing output window (window 1) and creates a small window (window 4) in the bottom left corner to display the coordinates of the object you draw. The coordinates are in standard MBASIC form: (x,y) for a single point and (x1,y1) – (x2,y2) for the top-left and bottom-right corners of an object.

To use the subprogram, type it and save it in text format as Locator. When you need the coordinates of a point or an object as you're writing a program, type **MERGE "Locator"** in the Command window. The Locator subprogram will load without clearing the program you're working on. To run Locator, make sure the Command window is active, type **locator**, and press Return. You can now draw the object in the Output window. To draw a rectangle, simply drag the pointer down diagonally to the right. To draw a rounded rectangle such as a button, click once and then drag. To draw ovals, double-click and drag.

When you're satisfied with the size and position of the object, click in the Coordinate window. The current coordinates are automatically copied to the Clipboard, ready to be pasted into a BASIC statement. The object you drew remains in the window, so you can position new objects around it. To draw more objects, call Locator again. Remember to delete Locator from the final program to save memory.

David A. Down
Tulsa, Oklahoma

(continues on page 172)

```
REM ***** Locator - by David A. Down *****
SUB locator STATIC : pm%=-1 : PENMODE 10   ' Flag as new and XOR drawing
WINDOW 4,,(0,325)-(135,340),3 : WINDOW 1   ' Create windows
lp.: IF DIALOG(0)=3 AND DIALOG(3)=4 THEN elp.   ' Exit if click in window 4
m%=ABS(MOUSE(0)) : IF m%=0 THEN lp.   ' Wait for mouse button
FOR i%=0 TO 3 : r%(i%)=MOUSE(6-i%) : NEXT   ' Get start and end position
IF r%(0)>r%(2) THEN SWAP r%(0),r%(2)   ' Order X-coordinates
IF r%(1)>r%(3) THEN SWAP r%(1),r%(3)   ' Order Y-coordinates
IF r%(0)<0 OR r%(1)<0 THEN lp.   ' Must have positive values to be in window
IF r%(0)=p%(0) AND r%(1)=p%(1) AND r%(2)=p%(2) AND r%(3)=p%(3) THEN lp.  ' Must be new position
r$="("+MID$(STR$(r%(1)),2)+","+MID$(STR$(r%(0)),2)+")"   ' Initial location string
IF r%(0)<>r%(2) OR r%(1)<>r%(3) THEN r$=r$+"-("+MID$(STR$(r%(3)),2)+","+MID$(STR$(r%(2)),2)+")"

    Rectangle spec. string
WINDOW OUTPUT 4 : PRINT CHR$(12);r$;   ' Display rectangle spec.
WINDOW OUTPUT 1 : IF pm%>=0 THEN drect pm%,p%()   ' Erase old rectangle
drect m%,r%() : pm%=m% : FOR i%=0 TO 3 : p%(i%)=r%(i%) : NEXT   ' Draw and save new rectangle
GOTO lp.   ' Go back for next mouse position
elp.: OPEN "O",#1,"CLIP:TEXT" : PRINT#1,r$; : CLOSE #1   ' Save rectangle spec. on CLIP
END SUB   ' Return to user
SUB drect(m%,r%(1)) STATIC   ' Support routine for various rectangles
ON m% GOTO r1.,r2.,r3.   ' Select appropriate type
r1.: FRAMERECT VARPTR(r%(0)) : GOTO r0.   ' Plain rectangle
r3.: FRAMEOVAL VARPTR(r%(0)) : GOTO r0.   ' Ovals and circles
r2.: h%=(r%(2)-r%(0))/2 : FRAMEROUNDRECT VARPTR(r%(0)),h%,h%   ' Button shaped rectangle
r0.: END SUB   ' Return to main routine
```

Locator
This MBASIC subprogram displays the screen coordinates of graphic objects, making it easy to correctly position the objects on the screen.

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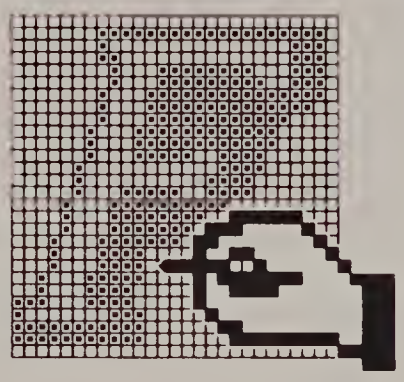

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(continued from page 170)

Beat the Clock with a Ruler

While working on a long *MacWrite* document with a 128K Macintosh, I often make several margin or tab adjustments. Fortunately, I found a way to avoid waiting while *MacWrite* reformats the text after each tab or margin change. Before I begin making ruler changes, I use the Insert Ruler command to insert a dummy ruler immediately below the one to be changed. Then I make all the tab and margin changes on the original ruler. Because the dummy ruler governs the text formats, the wristwatch appears for only about a second between changes. When the changes are complete, I click on the dummy ruler and press Backspace. The dummy ruler disappears, and *MacWrite* makes all the formatting changes in the document almost instantly.

Karen Achor
Key Largo, Florida

Maxi MiniFinder

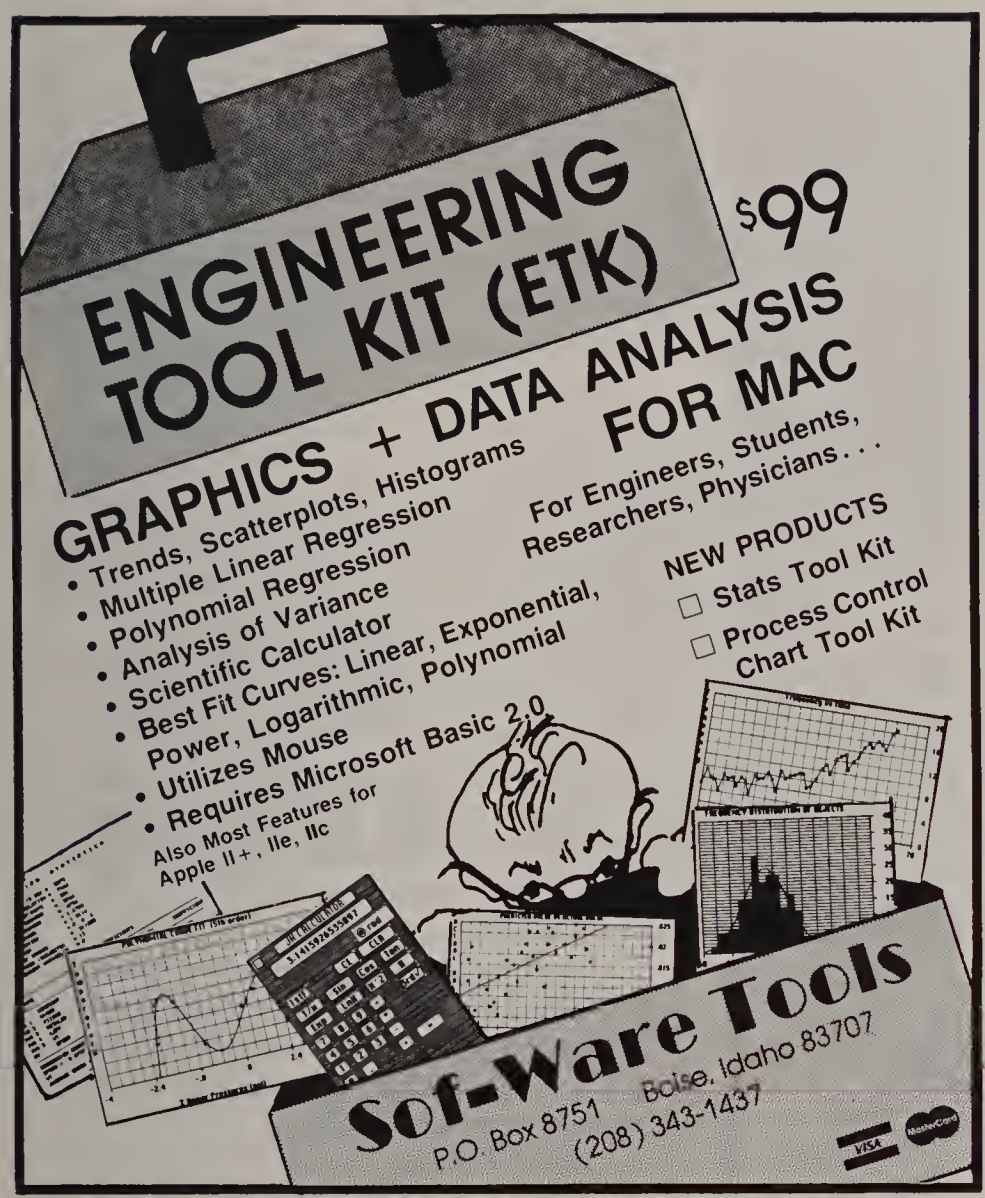
The MiniFinder feature in version 4.1 of the Finder is faster than the Finder, but it can't display more than 12 icons at once. I work around this limitation with a technique that makes it easy to organize numerous applications on a hard disk.

When you install the MiniFinder, the Macintosh creates an application program called MiniFinder that automatically starts whenever you quit an application. By renaming several copies of the MiniFinder, you can install MiniFinders within MiniFinders.

Say you want to organize programs into three categories: Word Processors, Data Managers, and Graphics. Using the Finder, follow these steps:

- Select the word processing applications, choose Use MiniFinder from the Special menu, and click Install.
- Locate the MiniFinder icon on the desktop and duplicate it by selecting it and choosing Duplicate from the File menu. Rename the second MiniFinder "Word Processors." You have to duplicate the MiniFinder because the Finder won't let you rename the original.
- Select all the database managers, choose Use MiniFinder from the Special menu, and click Install.

(continues on page 174)



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(continued from page 172)

- Locate the MiniFinder icon on the desktop, duplicate it, and rename the duplicate Data Managers.
- Select the graphics applications, choose Use MiniFinder from the Special menu, and click Install.
- Locate the MiniFinder icon on the desktop, duplicate it, and rename the duplicate Graphics.
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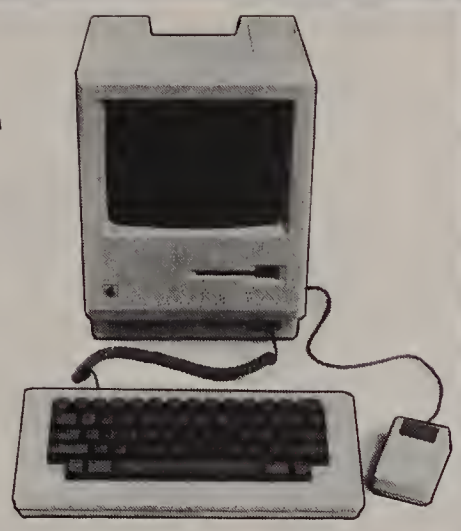

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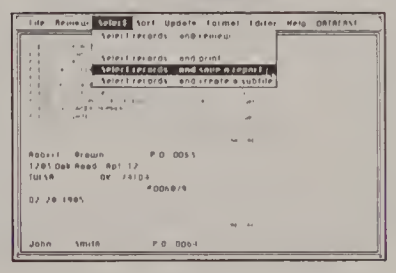

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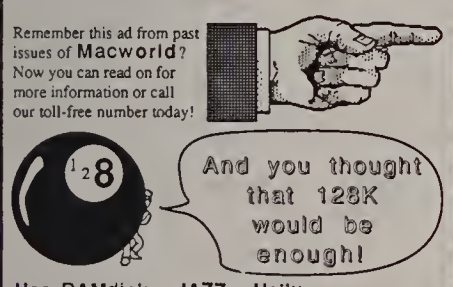

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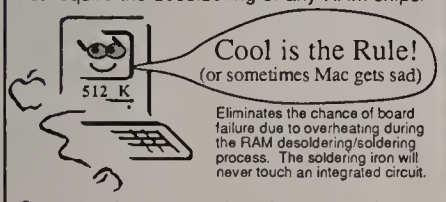

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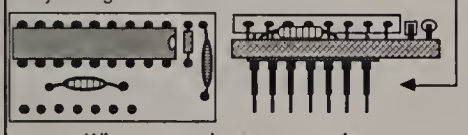

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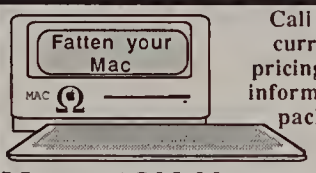

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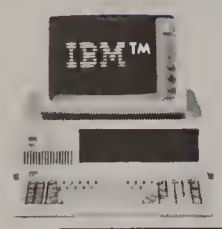

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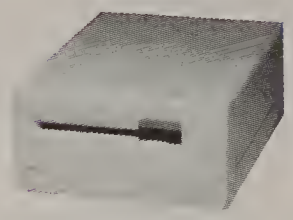

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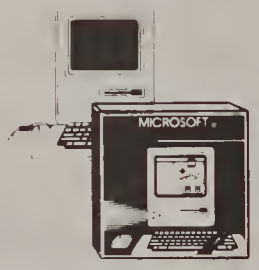

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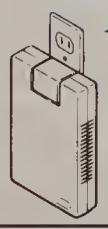

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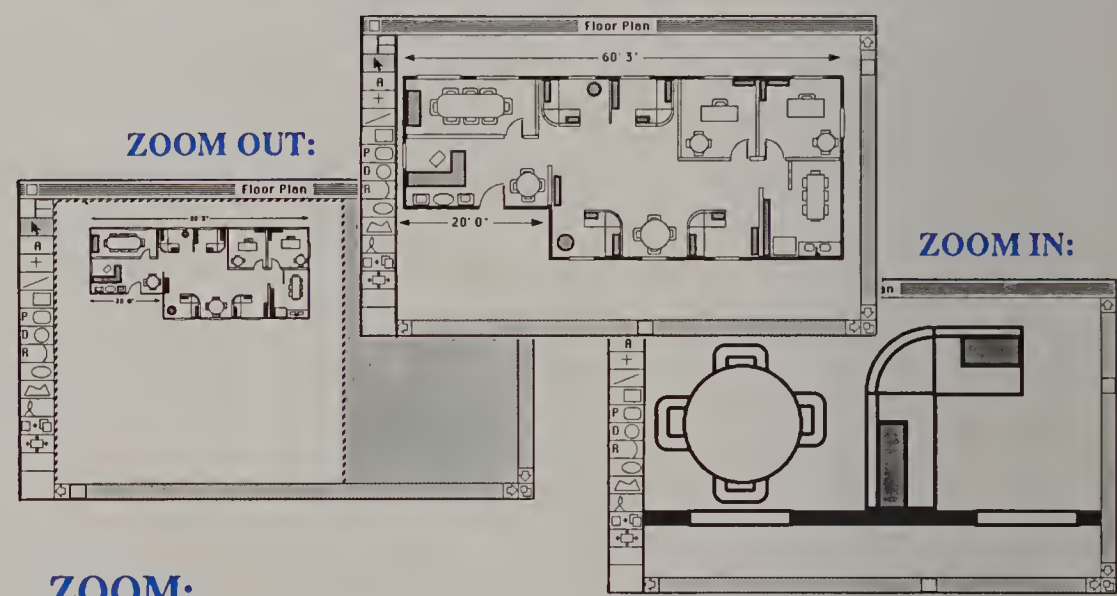
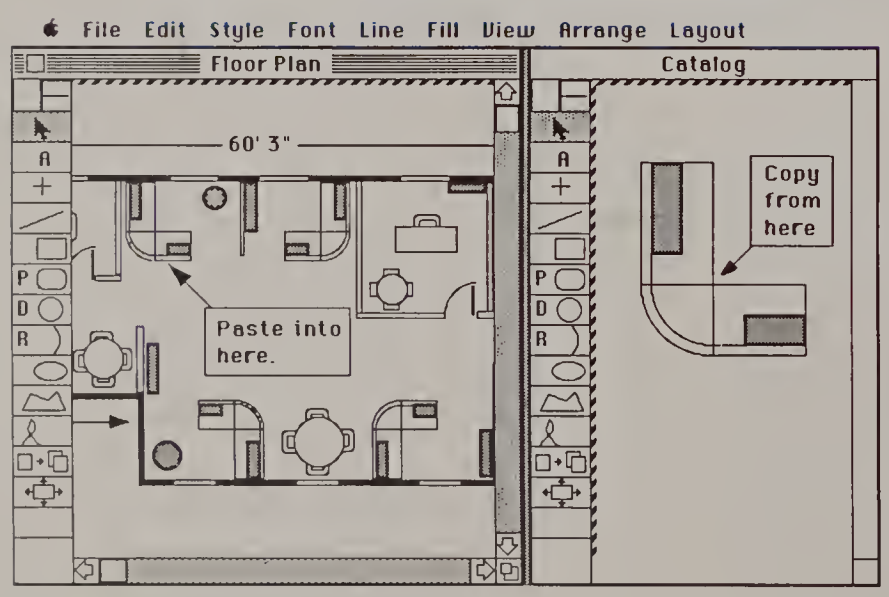
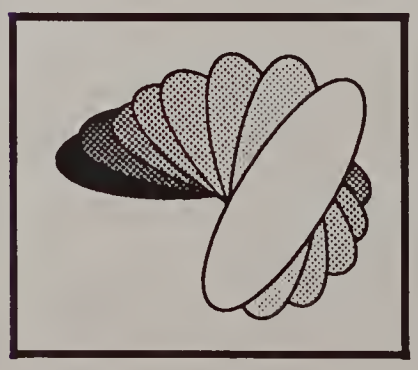


ZOOM:

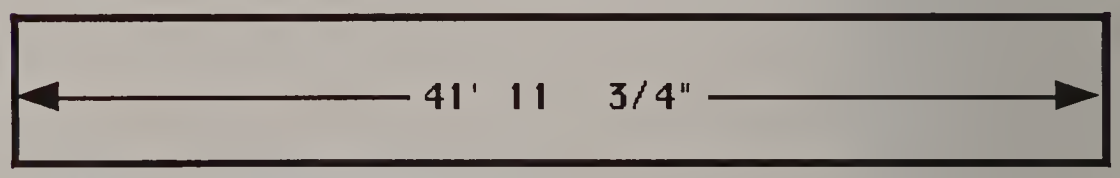
The Zoom functions allow you to see either a reduced or magnified view of a drawing, while still enabling you to have full access to all of the drawing capabilities of MacDraft™. You can Zoom Out from the normal viewing window, until you can see an entire drawing, regardless of its size. While at a zoomed out view, you can easily add large objects or lines to your drawing that may actually extend beyond the viewing window. Or, you can Zoom In to magnify your drawing, and add fine details that may not be convenient to create at a normal view. You can zoom in on any part of your drawing up to eight times its normal magnification.





ROTATION:

MacDraft™ allows you to rotate single or grouped objects in as little as one degree increments. You can also rotate multiple objects about their individual centers, or group them, and rotate them about the center of the group.



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Macworld Gallery

An exhibition of Macintosh graphics

Edited by Erfert Nielson

This month's Gallery *features the grand-prize winners of the Macworld Art Contest. Our panel of judges reviewed the winning drawings from the past 11 issues and, after much deliberation, chose three drawings from among them. It wasn't an easy decision because the artwork covered a wide spectrum of subject matter and drawing techniques.*

To have your drawing considered for publication in Macworld Gallery, *send a paper copy of it to* Macworld Gallery, *555 De Haro St., San Francisco, CA 94107. Please include your phone number with your submission. If your drawing is selected, we will ask you to send a copy of it on disk. Because of the large number of entries we receive, we are able to notify only those people whose drawings are accepted for publication.*

■ *$5000–Grand Prize*

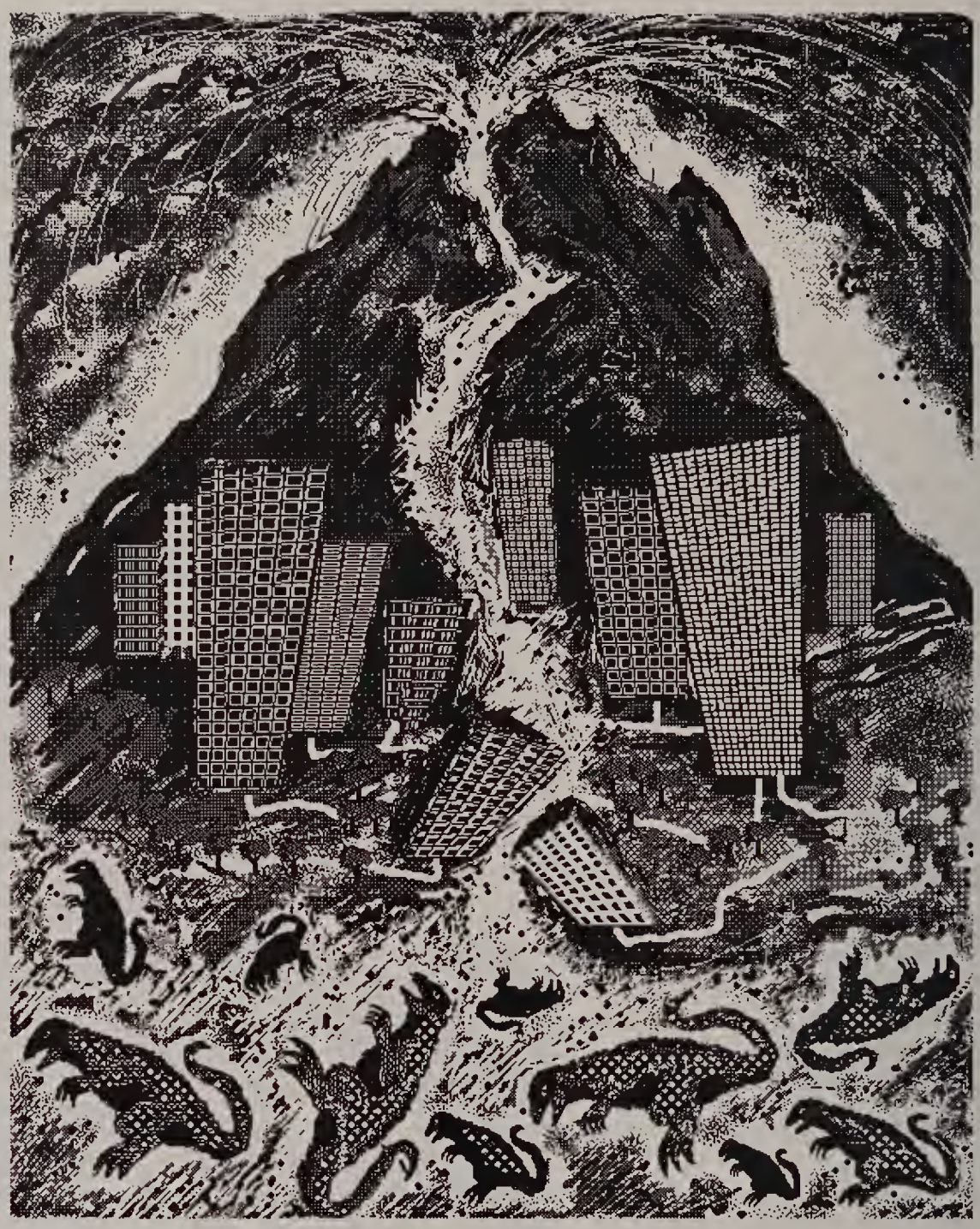
Crow

Pat Perrin
Athens, Georgia

Crow

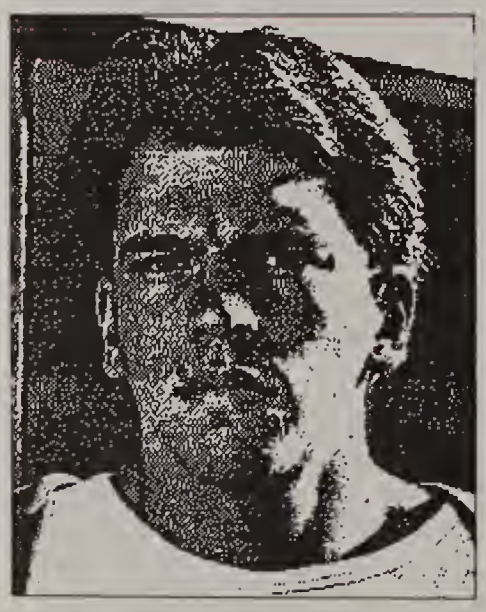
$2500–Runner Up
The Return of the Dinosaurs

Charles B. Murphy
Chicago, Illinois

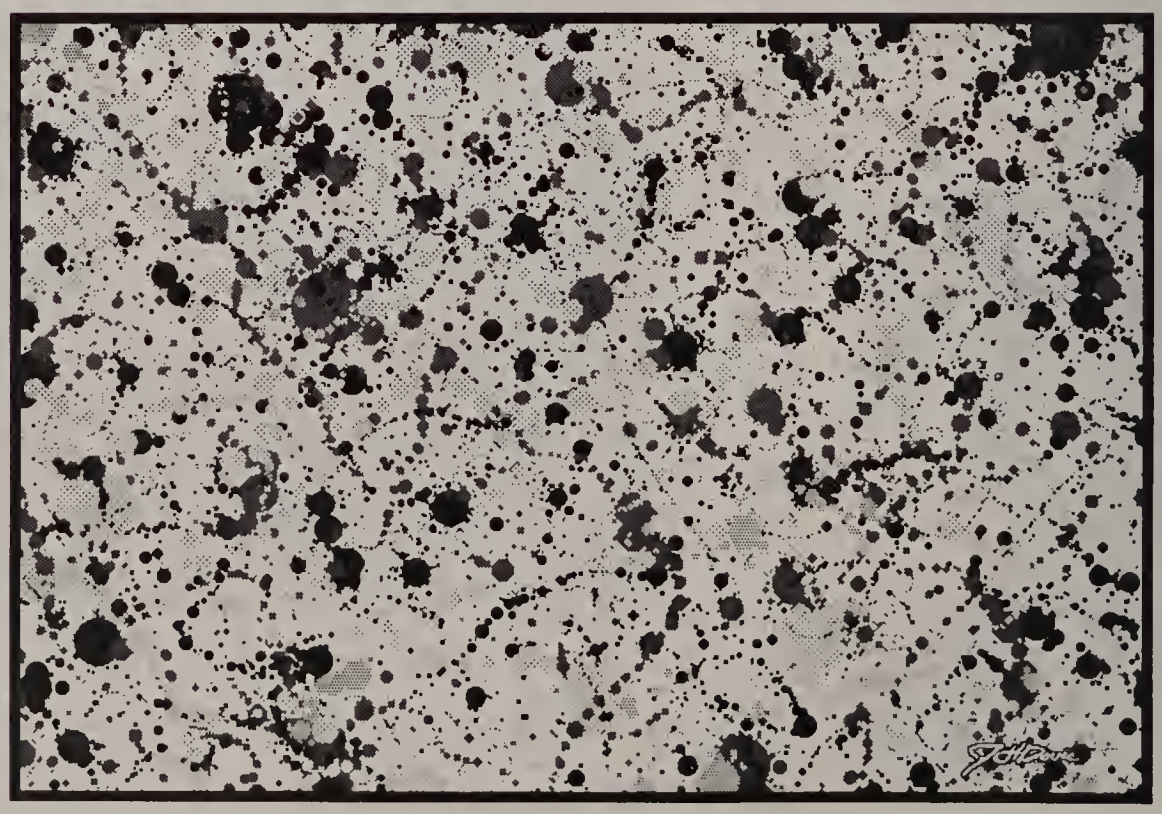


The Return of the Dinosaurs

$2500–Runner Up
Abstract 11



Jack Davis
La Mesa, California



Abstract 11

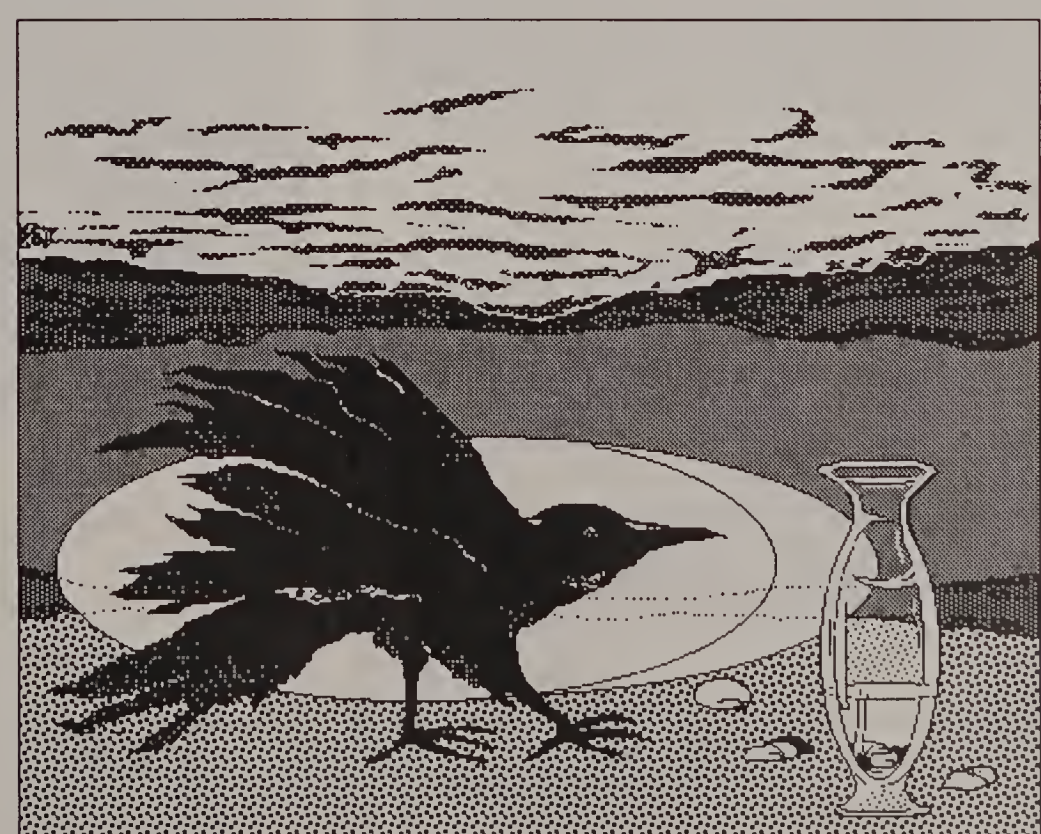
Stepping Zone
I created ten patterns, all based on the chevron design, with different degrees of light and dark. Then I sketched my foot, first in silhouette and then modeling the light that came from a nearby window. Finally, I spent a long and arduous time smoothing out the drawing in FatBits.

Scott Morse
Gonzales, Texas

The Thirsty Crow
This painting illustrates a fable in which a crow places stones in a vessel to raise the water level enough to take a drink. I drew the crow with the pencil, filled it in with the paint can, and softened the outline with the pencil and the spray can. For the sky I used the paintbrush to wash in a dark pattern, then went back in with white paint to thin the clouds.

Abby Dennis
Sault Sainte Marie, Michigan □

Stepping Zone



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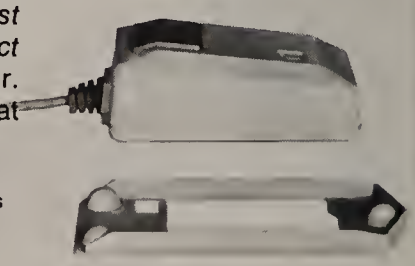

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Backup utilities also available for the IBM, Apple and Commodore 64!

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Circle 175 on reader service card

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The Apple Logo is a trademark of Apple Computer, Inc.

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Bulk Mailer	19.64	98.20
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Click-on Worksheet	12.12	60.60
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Davinci (We have them all!)	call	call
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Factfinder	23.76	118.80
Filevision	29.56	147.80
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Front Desk	24.95	113.40
Gato	9.30	37.80
Helix	55.89	279.45
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Jazz	89.80	445.00
Keystroke	58.80	294.00
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Microsoft File, Multiplan, Word	26.51	120.50
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	Rent	Buy
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Sales Edge	35.52	177.60
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Turbo Charger	14.46	72.30
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- add $1.90 for C.O.D.

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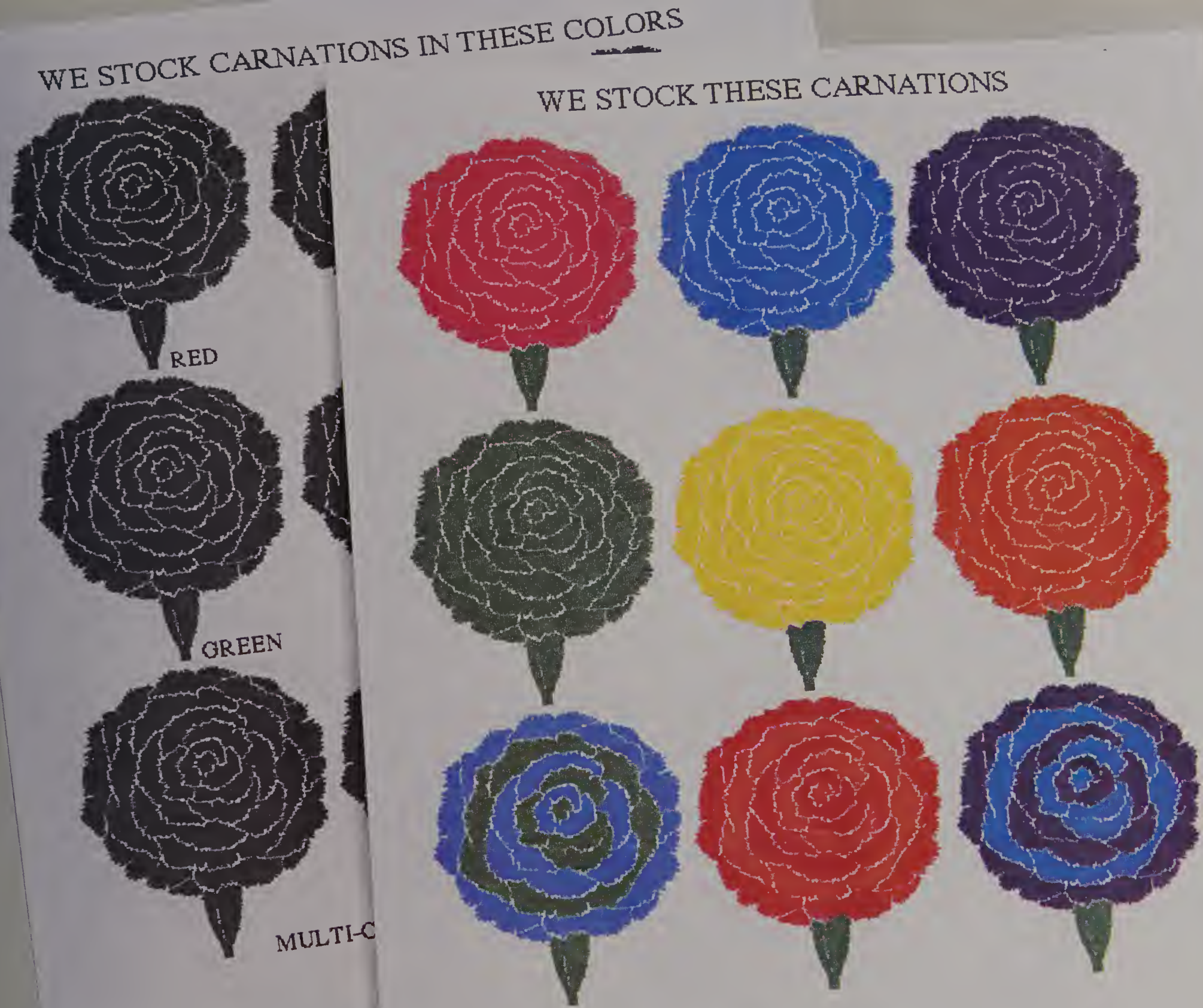

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